Tutorial

In this chapter:

- Introduction
- Scenario
- Lesson 1: Configuring the GPS Pathfinder Office software
- Lesson 2: Preparing to collect data
- Lesson 3: Differentially correcting the field data
- Lesson 4: Viewing and editing the data
- Lesson 5: Exporting data to a GIS or CAD system
- Lesson 6: Updating the data
- Lesson 7: Back in the office
- Lesson 8: Special lesson
### Introduction

This chapter explains how to collect and maintain data for a GIS, and process the collected data using the GPS Pathfinder Office software. It contains step-by-step instructions for the main tasks involved.

The tutorial lessons are designed to be completed in sequence, with each lesson using the results from the previous lesson. The exception is Lesson 8: Special Lesson, which has no effect on the other lessons and can be done independently. The lessons assume that the GPS Pathfinder Office software’s default settings are unchanged. If they have been changed, the software may behave differently.

The lessons use sample files supplied with the GPS Pathfinder Office software. By default, these sample files are located in the \Pfdata\Tutorial folder. If they have been deleted, reload them from the installation CD using a Custom installation, and select the Tutorial Files check box. For more information on installation, see Chapter 2, Installation.

*Note – This tutorial assumes that you are familiar with GPS and using the Windows software environment.*
Table 4.1 lists the lessons in this tutorial.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Approximate time to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Configuring the GPS Pathfinder Office Software</td>
<td>3 minutes</td>
</tr>
<tr>
<td>2. Preparing to Collect Data</td>
<td>5 minutes</td>
</tr>
<tr>
<td>3. Differentially Correcting the Field Data</td>
<td>7 minutes</td>
</tr>
<tr>
<td>4. Viewing and Editing the Data</td>
<td>15 minutes</td>
</tr>
<tr>
<td>5. Exporting Data to a GIS or CAD System</td>
<td>3 minutes</td>
</tr>
<tr>
<td>6. Updating the Data</td>
<td>12 minutes</td>
</tr>
<tr>
<td>7. Back in the Office</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Subtotal</td>
<td>60 minutes</td>
</tr>
<tr>
<td>8. Special Lesson</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Total</td>
<td>70 minutes</td>
</tr>
</tbody>
</table>

**Scenario**

The local City Government maintains a GIS of its public assets. This includes street signs, utility poles, parks and their amenities, parking lots, and other types of assets. Information is stored about each asset, including its condition and other information specific to each type of asset.

Your task is to prepare the data dictionary so that the field crews can collect the required information, process the data using the GPS Pathfinder Office software, and then export it to your GIS.

A few months later, the data needs to be updated, so you must then import the data from your GIS into the GPS Pathfinder Office software, update the data dictionary, and send the field crews out with the data so that they can update information on the assets.
Lesson 1: Configuring the GPS Pathfinder Office Software

There are three options in the GPS Pathfinder Office software that are important to configure before you use it.

This lesson shows you how to:

- set the local time zone
- select a project
- select a coordinate system

It takes approximately three minutes to complete.

Starting the GPS Pathfinder Office Software

To start the Product software, do one of the following:

- Click on the Windows taskbar, then select Programs / GPS Pathfinder Office.

- Double-click the GPS Pathfinder Office shortcut icon on the desktop:

The GPS Pathfinder Office logo appears while the program is loading, followed by the Product application window.
Setting the Local Time Zone

You must configure GPS Pathfinder Office for the local time zone. If you do not, the time records in field data files display as GPS time, which approximates Greenwich Mean Time. Normally, you set the local time zone once (and whenever summer time changes are necessary).

To set the local time zone:

1. The first time you start the GPS Pathfinder Office software, you are asked to set the time zone:

2. Click Yes.

3. The Time Zone Settings dialog automatically appears. If it does not, select Options / Time Zone. The following dialog appears:

4. From the Time Zone field, select the time zone for your current location.
Tip – If the local time zone is not available, click **New Time Zone**. The *Add Time Zone* dialog appears. Enter the name of the time zone and the offset from Greenwich Mean Time. For example, if the time zone is 9 hours and 45 minutes behind Greenwich, enter -9:45 as the offset. Click **OK**.

5. Click **OK** to save the time zone settings and close the dialog.

Tip – To display GPS times at any stage, select Greenwich Mean Time (+0:00) instead of the local time zone.

### Selecting a Project

A project is a set of folders on the computer that store the data files for a particular job. They let you separate the data into different areas on the computer so that you can keep track of different jobs separately.

You must decide how you want to use projects to separate the data. You may want to have a different project for each different site you are working on, or you may have a project for each of your clients.

*Note – If you include invalid characters, such as ?, +, >, or “ “, when naming a new project, you will receive an error message.*

A project defines where certain types of files are stored on the computer. Each project can point to a different set of folders. The types of files that are distinguished by projects are:

- data files, including files created by importing from a GIS
- base files
- exported GIS or CAD format files
- backup copies of field data files

Each of these file types can be assigned a different default folder. By default, this folder is selected whenever you open or save one of the above types of files. In most cases you are not limited to just this folder, but it serves as a useful default.
The types of data that are not distinguished by projects are:

- data dictionaries
- waypoint files
- background files
- configuration files

These four types of files can be stored in projects if you want. However, if you change projects the default folder will not change. Usually these types of files are stored separately from project data so that they can be accessed easily by all projects.

To select a project:

1. When you start the GPS Pathfinder Office software, the Select Project dialog appears automatically:

   ![Select Project dialog](image)

   If this dialog does not appear, select File / Projects to display it.

   **Tip** — To stop the Select Project dialog appearing each time you start GPS Pathfinder Office, clear the Display this dialog at start-up check box.
2. From the *Project Name* field, select Tutorial.
3. Look at the folders that are defined for this project:

<table>
<thead>
<tr>
<th>The folder ...</th>
<th>Is defined as ...</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>project</td>
<td>Pfdata\Tutorial</td>
<td>This is the main project folder where the data files are stored. Whenever you open, save, or import a data file, this folder will be selected by default.</td>
</tr>
<tr>
<td>backup</td>
<td>Pfdata\Tutorial\Backup</td>
<td>A folder within the main project folder. This is the folder where backup copies of the field data are kept. Backup copies are made when files are transferred from a data collector to the office computer.</td>
</tr>
<tr>
<td>export</td>
<td>Pfdata\Tutorial\Export</td>
<td>A folder within the main project folder of Pfdata\Tutorial. This is the folder where any exported GIS or CAD format files will be created by default.</td>
</tr>
<tr>
<td>base file</td>
<td>Pfdata\Tutorial\Base</td>
<td>A folder within the main project folder of Pfdata\Tutorial. When selecting base files for differential correction, by default, the software looks in this folder. If you have one central folder for all base files, you can define this folder explicitly when creating your own projects. For example, if all of the base data resides on a network folder, n:\Basedata, enter this folder in the Base files field. The same rule holds for the other folders of a project.</td>
</tr>
</tbody>
</table>

4. Click **OK** to accept the tutorial project.
Tip – For an introduction to projects, and for more information on the Select Project dialog, see the topic Projects in the GPS Pathfinder Office Help.

4.3.4 Selecting a Coordinate System

You need to use a coordinate system that is suitable for the area in which you are collecting data. For example, in order to display collected GPS positions in relation to a background map, the GPS Pathfinder Office software must be able to relate GPS latitude and longitude coordinates to north and east coordinates on the map. It is also critical that you have the correct coordinate system selected when you:

- enter waypoint coordinates
- print or plot the map
- export coordinates to a GIS or spatial database
- import features from a GIS or spatial database
- enter manual positions

In the GPS Pathfinder Office software you can choose the correct coordinate system by selecting a coordinate system and an associated zone, or by selecting a local site. To properly specify a system, you need to select a zone and/or datum. Your choice affects the display of the field data, but not the data itself.

Tip – For an introduction to the concepts of coordinate systems and zones (and the associated concepts of a datum, an ellipsoid, and a geoid), refer to the Mapping Systems General Reference.

Tip – The currently selected coordinate system is displayed in the status bar.
For this project, you need to select a UTM coordinate system:

1. Select Options / Coordinate System. The following dialog appears:

2. Make sure that the Select By group is set to the Coordinate System and Zone option.
3. Set the System field to UTM.
4. Set the Zone field to 10 North.
5. Set the Datum field to NAD 1983 (Conus).
6. Set the Altitude Measured From group to the Mean Sea Level (MSL) option.
7. Make sure that the Geoid Model group is set to the Defined Geoid (EGM96 (Global)) option.
8. Set the Coordinate Units field to Meters.
9. Set the Altitude Units field to Meters and click OK.
Lesson 2: Preparing to Collect Data

This lesson introduces you to the concepts of:

- GPS data collection
- Features
- Attributes

It shows you how to:

- open a data dictionary
- print a data dictionary
- transfer a data dictionary to a data collector

It takes approximately five minutes to complete.

GPS Data Collection

Organizations such as utility companies, scientific organizations, and local governments have billions of dollars of fixed assets and equipment located throughout their region. They must be able to accurately locate, monitor, and maintain these assets.

The large task of managing these assets is greatly reduced with the use of proper field information management tools such as GPS data collection systems and GIS databases.

Information on assets can be collected in the field using a data collector. A data collector logs information in the form of ‘features’ and ‘attributes’.
4.4.2 Features

A feature is a physical object or an event in the real world for which you want to collect position and descriptive information. For example, you may want to collect information about lakes or roads.

Each feature has a feature name. Feature names are equivalent to themes or layers in a GIS or CAD system. Each occurrence of a feature is equivalent to a record in that theme or layer in a GIS system.

GPS data collector use feature classification to determine the way the data collection software logs GPS positions.

A feature can be one of three different types. See Table 4.2.

<table>
<thead>
<tr>
<th>Feature type</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point</td>
<td>Accident sites</td>
</tr>
<tr>
<td></td>
<td>Water faucets in a park</td>
</tr>
<tr>
<td>Line</td>
<td>Paths</td>
</tr>
<tr>
<td></td>
<td>Pipelines</td>
</tr>
<tr>
<td>Area</td>
<td>Lakes</td>
</tr>
<tr>
<td></td>
<td>Wetlands</td>
</tr>
</tbody>
</table>

4.4.3 Attributes

You can define a set of attributes for each feature type. An attribute is a piece of descriptive information about the feature. For example, for the feature, Path, you could have the attribute, Width. Each Path feature that you collect in the field will have its own value for this attribute.

For each attribute you must define an attribute name. Attribute names are equivalent to items, columns, or fields in a GIS or CAD system.
An attribute can be one of six different types. See Table 4.3.

### Table 4.3 Attributes

<table>
<thead>
<tr>
<th>Attribute Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Menu</strong></td>
<td>The surface type for a path</td>
</tr>
<tr>
<td><strong>Numeric</strong></td>
<td>The width of a path</td>
</tr>
<tr>
<td><strong>Text</strong></td>
<td>The name of the path</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>The date when information about the Path feature was collected</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>The time when information about the Path feature was collected</td>
</tr>
<tr>
<td><strong>File Name</strong></td>
<td>Linking the Path feature to an image of the feature on a computer</td>
</tr>
</tbody>
</table>

### Opening a Data Dictionary

A data dictionary is a description of the features and attributes relevant to a particular project or job. A data dictionary structures data collection; it does not contain the actual information collected in the field (positions and actual attribute values for each occurrence of a feature).

A data dictionary is used in the field to control the collection of features and attributes. For example, you may want to collect information about power poles, lakes, and roads. Therefore you can create a data dictionary that contains a list of all these features.

It is important to understand data dictionaries and how they are used in the field to control feature and attribute collection. A data dictionary prompts you to enter information; it can also limit what you enter to ensure data integrity and compatibility with your GIS or CAD system. Although data dictionaries are not always required for field work, they do make collecting, updating, and processing data easier and faster.
A data dictionary consists of the following elements:

- A list of features to be collected in the field
- A list of attributes (if any) that describe each feature

A data dictionary should contain all the features for which you want to collect information. You can have different data dictionaries for different projects, for example, a road map data dictionary and a utility data dictionary. You can only use one data dictionary at a time in the field. If you want to collect information about roads at the same time as information about utilities, it is important to put all the features into one data dictionary.

To open a data dictionary:

1. Select Utilities / Data Dictionary Editor.
   Alternatively, click .

The Data Dictionary Editor utility starts:
2. Open the Tutorial.ddf file in the Pfdata\Tutorial folder. To do this, do one of the following:
   - Click.
   - Select File / Open.

3. Go to the folder C:\Pfdata\Tutorial and select the file Tutorial.ddf, and then click Open. The following dialog appears:

   ![Data Dictionary Editor]

   Default settings have been added to the data dictionary.
4. Click **OK** to accept the default settings and open the file. The data dictionary editor opens and you will see a number of features and their attributes:

![Data Dictionary Editor](image)

5. Look at the **Features** column:

<table>
<thead>
<tr>
<th>This symbol ...</th>
<th>indicates that the feature is a ...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>point</td>
</tr>
<tr>
<td></td>
<td>line</td>
</tr>
<tr>
<td></td>
<td>area</td>
</tr>
</tbody>
</table>

7. The *Attributes* column shows you three defined attributes:

- Color
- Number of Spouts
- Last Inspection Date

8. Click on each of these attributes in turn. Notice that the right panel shows information about the currently selected attribute.

In this example, the number to be entered in the field must be a whole number. There can be a minimum of one spout and a maximum of 10 spouts. The default number of spouts is 2.

9. In the *Features* list, select the Path feature.

10. Click on each of the attributes. There are two attributes this time:

- Surface Type
- Width
11. In the Features list, select the Parking lot feature.

There is just one attribute:

- Surface type

It has the values:

- Asphalt
- Concrete
- Turf

Notice the * shown beside the value Asphalt. This means that Asphalt is the default value. Setting a default saves field crews from entering repetitive data and also makes collecting data simpler and faster.

You do not need to make any changes to the data dictionary at this stage. In the next section you will print the data dictionary.
Printing the Data Dictionary

To view the entire data dictionary description in text form, you can print it. You may want to keep a printout of each of your data dictionaries in case they are accidentally deleted.

**Tip** – To check the printer setup and font before printing, select *File / Print Setup* or *File / Set Printer Font*.

To preview the data dictionary printout before you actually print it:

1. Select *File / Print Preview*. The following window appears:

   ![Data Dictionary Editor Window]

   2. Click **Print**, check your printer settings and click **OK** to send the data dictionary to the printer.

   3. Select *File / Exit* to close the Data Dictionary Editor.

You are now ready to transfer the data dictionary to the data collectors so that your three field crews can go out and collect some data.
Transferring Data to a Data Collector

You need to transfer the data dictionary to the data collector so that your three field crews can use it in the field to collect data.

To do this, you would use the Data Transfer utility. The opening dialog of the Data Transfer utility is shown below:

![Data Transfer Utility](image)

For the purpose of this tutorial, we have done this for you.
Lesson 3: Differentially Correcting the Field Data

The data has been collected in the field by the three field crews. It has been transferred back to the office computer and now you need to process it.

You can significantly improve the accuracy of field data through a process called *differential correction*. This requires a set of ‘base’ files that are collected at a known location at the same time that the field data files are collected. Many regions have Community Base Stations or Trimble Reference Stations that can supply this base data, or you can use a second data collector to collect your own base data. For more information, refer to the Differential Correction Help.

The base files for the tutorial are in the Pfdata\Tutorial\Base folder (the folder that was defined for base files in the tutorial project). There are two base files. These files came from a Community Base Station and each spans one hour.

This lesson shows you how to:

- differentially correct the field data collected by your three field crews

It takes approximately seven minutes to complete.
To differentially correct the field data:

1. In the GPS Pathfinder Office software, click the *Differential Correction* tool, or select *Utilities / Differential Correction*.

The Differential Correction utility appears:

![Differential Correction Utility](image.png)
2. In the **Rover Files** group, click **Browse** to select the data files to be differentially corrected. The following dialog appears:

![Select Rover Files dialog]

By default, the `Pfdata\Tutorial` folder is selected, as this is the default folder for data files that was defined when we selected the project (see Selecting a Project, page 52). There are three data (rover) files available that have the filename of ‘TutdataX.ssf’. These data files were collected at the same time by three different field crews. You need to correct all three files.

3. Select the three files Tutdata1.ssf, Tutdata2.ssf, and Tutdata3.ssf, then click **Open** to confirm the selection and close the dialog.

**Tip** – To select the three files, click Tutdata1.ssf, hold down **Ctrl**, and click Tutdata2.ssf then Tutdata3.ssf.

The three files appear in the **Selected Files** field in the upper left portion of the dialog.
4. In the Base Files group, click **Local Search** to select the base files. The following dialog appears:

![Local Search for Base Files](image)

This dialog lets you set a folder from which the software automatically selects base files, based on the start and end times of the rover files.

5. Make sure that the **Folder** field contains the base folder as defined in the Tutorial project. The software searches for the displayed files in the search folder.

6. Click **Search** to start the search. When the search is complete, the following window appears:

![Confirm Selected Base Files](image)
The dialog shows the three data files, which were collected in the field, along with their start and end times. Each file has 100% in the Coverage column. This indicates that the data file is completely covered by the base files that have been found in the base files folder for the project.

We will use these two base files to differentially correct the rover files.

7. Click OK to confirm the selection. The Reference Position dialog appears:

The reference position is the known location at which the base files were collected.

Note – As these base files come from a Community Base Station, the displayed reference position is accurate and correct. However, if you collected your own base data, the reference position could be incorrect or absent. In this case, you must know the reference position and enter it in this dialog. An inaccurate reference position will result in errors in the corrected data.
8. The first time this dialog appears, either the coordinate system appears as Lat/Long or the last coordinate system used appears. If necessary, click **Change** and change the coordinate system to match the coordinate system that is shown in the status bar of the GPS Pathfinder Office software (UTM, 10 North, NAD 1983 (Conus), EGM96 (Global), and then click **OK** to confirm the reference position. You are returned to the **Differential Correction** dialog:

![Reference Position Dialog]

The data files and base files are now displayed in the **Differential Correction** dialog. The **File Extension** field is set to .cor. This is the extension that the differentially corrected output files will have. For example, the corrected version of Tutdata1.ssf will be called Tutdata1.cor.

9. In the **Processing** group, make sure the **Smart Code and Carrier Phase Processing** option is selected. This is the default setting and it is the most thorough type of processing.
10. Confirm that the settings are the same as shown here:

![Differential Correction Window]

11. Click **OK** to start the differential correction process.

12. If the message 3 file(s) may be overwritten. Continue? appears, click **Yes** to continue. A series of progress bars indicates the status of the operation.
When the process is complete, the following message appears:

![Differential Correction Completed](image)

- 3 files processed. In these files:
  - 100% of the selected positions were code corrected.
  - 1578 positions were read for code correction.
  - 1578 positions were code corrected.

File cor2002a.txt contains a detailed log

13. 100% of the positions were corrected. Click **Close** to remove the message without displaying the correction log.

In real use, if not all of the positions were corrected, you can click **More Details** to display a log file to help you track down the source of the error.
Lesson 4: Viewing and Editing the Data

You now need to visually check the data before you export it to a GIS or spatial database. This is to confirm that all the expected data is there, and to look for any unwanted positions.

This lesson shows you how to:

- open the data files
- select a coordinate system
- display the Map window
- display the Time Line window
- load the background files
- configure the Map window
- view the attributes of a feature
- view the offset of a feature

It takes approximately fifteen minutes to complete.
Opening the Data Files

You must open the data files in the GPS Pathfinder Office software to view them. You can open as many files as you like together, but you can only edit files if they are opened individually.

To open data files:

1. Select *File / Open*. The following dialog appears:

![Open dialog](image)

The three files that were just created by the Differential Correction utility are selected by default.

2. Click **Open** to confirm the selection.
Displaying the Map and Time Line Windows

There are two methods available to display the data. The first is the Map window, where the file appears along with any background files. The second is the Time Line window, which presents a visual display of when the data was collected along a linear time axis.

To display the Map and Time Line windows:

1. Select View / Map. The Map window appears:

2. Select View / Time Line. The Time Line window appears:

Tip – If the Map window is not open and no files are loaded, select View / Map to automatically open the Open Data Files dialog. This is a handy shortcut for opening the data files. The same rule applies for the Time Line window.
4 Tutorial

Loading the Background Files

You can specify one or more background files, such as street maps and aerial photographs, for display in the Map window. These files provide a background for the field data files.

There are two types of background files:

- **Vector files (or drawings)**
- **Raster files (or images)**

**Vector files**

A vector file loads and transforms into any coordinate system

The vector file Streets.dxf has its coordinates stored as Latitude/Longitude (WGS-84), but the coordinate system for the project is currently set to UTM.

We will need to specify that this file is set to the Latitude/Longitude coordinate system so that the GPS Pathfinder Office software can automatically transform the file from that coordinate system into UTM.

**Raster files**

Raster files must be displayed in the coordinate system to which they are ‘geo-referenced’. Geo-referencing involves matching the pixels in a raster file to real-world coordinates. All raster files **must** be geo-referenced before they can be loaded into the GPS Pathfinder Office software.

The raster file Aerial.bmp is geo-referenced in the UTM coordinate system, and UTM is the coordinate system for the project.

You can load this file without setting the coordinate system.

You will load the two background files one at a time so that you can see what each background file looks like individually.
To load the background file Streets.dxf:

1. Select File / Background. The Load Background Files dialog appears.

2. Click Add. The following dialog appears:

   ![Add Background Files dialog]

3. Select the file Streets.dxf and click Open to return to the Load Background Files dialog.

   The following message appears, reminding you to set the correct coordinate system for the new background files (you will do this in Step 5):

   ![Pathfinder Office dialog]

Please remember to set the correct coordinate system for each new background file. If the coordinate system is incorrect, it will display incorrectly in the Map window.
4. Click **OK** to clear the message. The following dialog appears:

![Load Background Files dialog]

The check mark to the left of the filename indicates that the file loads when you close the dialog.
5. You need to specify that this file is set to the Latitude/Longitude coordinate system, so click *Change*. The *Coordinate System* dialog appears:
a. Change the System field to Latitude/Longitude. (The Datum field automatically changes to WGS 1984.)

b. Click OK to accept the selected coordinate system and zone, and return to the Load Background Files dialog:

6. Click OK to load the background file and close the dialog.
The *Map* window displays the background Streets.dxf file:

7. Start to load the second background file, Aerial.bmp, following Step 1 through Step 4 above.

We do not need to change the coordinate system for this file as it is geo-referenced in the UTM coordinate system, which is the coordinate system for this project:
8. Click **OK** to accept the selected coordinate system and to close this dialog.

A progress bar appears while the files are loading. When it is finished, the *Map* window should look like this:
Configuring the Map Window

You can configure the Map window to only show certain information. For example, you can change the symbols or line colors used to display features to make it easier to differentiate between features. You can also hide features in the data file or layers in the background files to make it easier to view the data.

Feature style settings are shared by the TerraSync™ software, v2.10 or later, so you can have a common feature style in the office and in the field. Any changes in one place affects the other when you transfer the files.

To change the style of point features:

1. Select View / Layers / Features. The following dialog appears:

2. We will not change the symbol assigned to the Fire Hydrant feature, however, we will change its color and size. To change the symbol details, select the Fire Hydrant feature (click on the word Fire Hydrant) and then click Symbol.

Tip – You can also change the symbol of a selected feature, by double-clicking on the name of the feature. Alternatively, in the Map window, right-click on a feature and select the <feature name> Layer Symbol command.
The dialog opposite appears:

3. In the Font list, make sure that Trimble GPS Pathfinder is selected.

4. Leave the Style field as is. This field shows the assigned ‘style number’ of a feature.

**Tip** – If you know the style number of a symbol, you can enter it directly in the Style field. For a table of assigned Trimble GPS Pathfinder symbol style numbers, refer to the GPS Pathfinder Office Help.

5. In the Size field, change the size of the symbol from the default of 15 to 20.

**Tip** – To view all the symbols for a font, click Change. The Select Style dialog appears. Select a different font, and then choose a symbol. Click OK.

6. In the Foreground list, select the color yellow. The changed symbol appears in the symbol preview area of the Fire Hydrant dialog:
7. Click **OK** to return to the *Features Layers* dialog.

8. Make sure that the *Show* check box next to the Fire Hydrant feature is selected so you can view the symbol in the *Map* window, and then click **OK**.

9. Click **OK** to close the *Feature Layers* dialog. The *Map* window is updated to display the data file using the new symbols and colors.

**To change the style of line and area features:**

1. Select *View / Layers / Features*. The *Features Layers* dialog appears.

2. Select Path from the list of features and click **Line Style** to display all the possible colors that can be assigned to the Path line feature. The dialog opposite appears:

3. From the *Color* field, select an appropriate color.

4. From the *Thickness* field, select an appropriate line thickness.

5. Repeat Step 2 through Step 4 for the following features:
   - Park Road
   - Park
   - Park Amenities
   - Parking lot

6. Click **OK** to close the *Feature Layers* dialog. The *Map* window is updated to display the data file using the new symbols and colors.
To remove the minor roads from the street background file:

1. If necessary, click the Map window or select Window / Map to make the Map window the active window.

2. To make sure that you can see the changes you are about to make use the zoom buttons on the Mouse toolbar to show as much of the park as you can in the Map window.

3. Select View / Layers / Background. The following dialog appears:

Each layer in the Streets.dxf file has a separate layer in this list. The aerial photograph is a single layer in this list. The minor roads are layers ROADS4, ROADS6, ROADS8, and ROADS9.

4. Select all of the above Road layers by clicking on ROADS4, holding down Shift, and clicking ROADS9.

   All the Road layers from ROADS4 to ROADS9 should be selected.

5. Click the box in the Show column to hide these layers. The check marks beside these layers disappear.
6. In the **View** group, select the **As Above** option. Selecting this option displays only the layers with a check mark.

7. Click **OK** to close the dialog. The **Map** window redraws without the minor roads.

### Viewing the Attributes of a Feature

You can view and edit the attributes of any feature or note in the GPS Pathfinder Office software. You can also view and delete the positions that make up a feature.

**Note** – When multiple data files are open, you can view, but not edit or delete, features and positions.

To view the attributes of a feature:

1. Click the **Select** tool or select **Edit / Select**.

2. In the **Map** window, double-click a feature. The feature is highlighted and the **Feature Properties** window appears:

   The feature shown here may differ from the one you have selected.

   The current feature type is shown at the top of the **Feature Properties** window. In the above example, it is a Point feature called Bench.

To select another feature, click on it in the **Map** window, or use the **First**, **<**,** >**,** Last** buttons to move to the first, previous, next, and last features respectively.
**Note** – The Feature Properties window also shows the contents of notes. Make sure that a feature, not a note, is selected before continuing on to the next step.

3. Below each feature name is a list of attribute names and values for that feature. Click the Attributes tab. The value of the selected attribute is shown in the bottom of the window:

4. Move to the next attribute by clicking on it in the Attribute Name list.

Because more than one file is open, you cannot edit attributes. If you were to open a single file, you could edit the attributes for any feature in the file.

### Viewing the Offset of a Feature

Offsets are an excellent tool for collecting features from a distance when they cannot be collected directly. For example, a feature underneath a bridge could be collected using an offset because the bridge will obstruct the GPS signal. Using the GPS Pathfinder Office software, you can view, add, or change an offset to any feature in an SSF file.

To view the offset for a feature:

1. Select the Bus Stop feature. This is the point feature to the far left of the park boundary. (If the Feature Properties window is not open, double-click the feature to select it and open the Feature Properties window.)
2. Click **Offset** on the **Summary** tab. The following dialog appears:

![Offset dialog](image)

This dialog shows how far and in what direction the feature is from the spot where the GPS receiver was placed when it was actually collected.

In this example, the location of the bus stop is 22 meters in a westerly direction from the spot where it was collected.

3. You cannot edit the offset because multiple files are open. Click **Cancel** to close the dialog.

*Note – For line and area features, a direction rather than a bearing, is defined. The direction indicates whether the feature is to the left or to the right, looking along the direction of collection.*

### Printing the Data

Creating a hardcopy plot of the data is often required for record-keeping, or as a part of a job submission. The GPS Pathfinder Office software lets you plot the contents of the **Map** window directly to any printer or plotter that is supported by Microsoft Windows.

*Note – Even if you do not have a printer or plotter you can complete this section of the tutorial.*

To plot the contents of the **Map** window:

1. Select the **Map** window to make it active.
2. Select **View / Zoom / Extents** to zoom the **Map** window to include all information. The **Map** window will show all of the data files and background files.
3. Select **File / Plot Map**. The following dialog appears:

![Plot Map Dialog](image)

<table>
<thead>
<tr>
<th>Plot Title:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale: 1:25,000</td>
<td></td>
</tr>
<tr>
<td>Bottom Left Coordinates:</td>
<td></td>
</tr>
<tr>
<td>North: 4138894.17 m</td>
<td></td>
</tr>
<tr>
<td>East: 506329.90 m</td>
<td></td>
</tr>
<tr>
<td>Top Right Coordinates:</td>
<td></td>
</tr>
<tr>
<td>North: 4143683.17 m</td>
<td></td>
</tr>
<tr>
<td>East: 569989.90 m</td>
<td></td>
</tr>
<tr>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Plot Border Ticks</td>
<td></td>
</tr>
<tr>
<td>Plot Grid Grids</td>
<td></td>
</tr>
<tr>
<td>Plot Lat/Long Border Ticks</td>
<td>00'00.00</td>
</tr>
<tr>
<td>Plot Lat/Long Grid</td>
<td></td>
</tr>
</tbody>
</table>

4. If you have more than one printer or plotter set up on the machine, click **Setup** to select the one you want to plot to. Select the printer or plotter and click **OK**.

5. Enter a title for the plot in the **Title** field. For example, type **Tutorial Files**.

By default, a sensible scale is selected that fits the contents of the **Map** window onto a single sheet of paper.
6. Click **Preview** to see a preview of the plot before it is actually plotted. The preview will look something like this:

7. Click **Close** to close the preview window.

8. Click **OK** to plot the map to the selected printer or plotter. Skip this step if you do not have a printer or plotter configured.
Lesson 5: Exporting Data to a GIS or CAD System

The result of many GPS data collection sessions is to incorporate the data into a database, such as a spreadsheet or a GIS. Depending on the database that you use, you must export your collected and edited data files in a format that your end-product software can use.

The GPS Pathfinder Office software supports a variety of major GIS, CAD, and spatial database formats. It also lets you define your own ASCII formats.

For the purposes of this tutorial, you will export the data files into ArcView Shapefile format.

This lesson shows you how to:

- export data files to a GIS format

It takes approximately three minutes to complete.
To export data files to a GIS format:

1. Click the Export tool or select Utilities / Export.

The Export utility appears:

When the Export utility starts, the most recently used data files are selected by default as input files.

2. Look at the Output Folder field. This defaults to the export folder specified in the current project, Pfdata\Tutorial\Export. This folder is where all export files will be created.
3. The list in the Choose an Export Setup group shows the export setups that are available. An export setup consists of a format plus several parameters that customize that format for a particular purpose. You can create as many export setups as you like and use them over and over. Select the Sample ArcView Shapefile Setup item.

This export setup creates output files in Shapefile format. The resulting Shapefiles contain 2D coordinates. Tracking themes are not exported.

4. The Choose an Export Setup group contains information about the export format, the type of data you are exporting, output options, and the coordinate system used for the exported data. Leave this as it is.

5. Make sure the settings are as shown below:
6. Click **OK** to start the export process.

7. If the message **File(s) may be overwritten. Continue?** appears, click **Yes** to continue.

A series of progress bars shows the progress of the export process. When the process is complete, the following message appears:

8. Click **Close** to remove the message without displaying the export log.

9. Using Windows Explorer or another file management utility, look at the contents of the \Pfdata\Tutorial\Export folder.

The following files exist in the folder:

<table>
<thead>
<tr>
<th>This file type</th>
<th>has this file extension</th>
<th>and contains ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHP File</td>
<td>.shp</td>
<td>exported data in Shapefile format.</td>
</tr>
<tr>
<td>SHX File</td>
<td>.shx</td>
<td>index files.</td>
</tr>
<tr>
<td>DBF File</td>
<td>.dbf</td>
<td>attribute data associated with the Shapefiles.</td>
</tr>
<tr>
<td>Setup Information</td>
<td>.inf</td>
<td>information on the settings used in the export process. You can use a text editor to open this file. This file is named after the first data input file in the Export dialog.</td>
</tr>
</tbody>
</table>
Lesson 6: Updating the Data

It is important to keep your GIS up-to-date so that accurate records can be maintained and that the information in the GIS can be used efficiently.

Six months after the three field crews went into the field and collected the data, you now need to send one field crew back to some of the sites to update some data and to collect a new feature.

This lesson shows you how to:

- edit the Tutorial data dictionary to add a new feature and attributes
- save the data dictionary
- import data from a GIS so it can be taken back into the field

It takes approximately twelve minutes to complete.
**Editing the Tutorial Data Dictionary**

The local City Government that you work for has recently installed some trash cans in a local park. You need to add this feature to your data dictionary so that the field crew can collect data about where each trash can is located.

In this section you will:

- start the Data Dictionary Editor and open a data dictionary
- add the new Trash Can feature and attributes for it
- add a new attribute to the Park Amenities feature

To open a data dictionary:

1. Start the Data Dictionary Editor utility and open the Tutorial.ddf file. (For a reminder on how to do this, see page 60.) The data dictionary opens. You will see a number of features and their attributes:
To add the Trash Can feature:

1. Click **New Feature**. Alternatively, press **F3**.
   The **New Feature** dialog appears.
2. In the **Feature Name** field, enter the text **Trash Can**.
3. In the **Feature Classification** group, make sure that the **Point** option is selected:

   ![New Feature dialog]

4. Click **OK** to return to the main Data Dictionary screen.
   The feature now appears in the Features list.
You can now add attributes to the Trash Can feature:

1. Make sure that the Trash Can feature is selected. Click **New Attribute** or press $[F7]$. The following dialog appears:

```
New Attribute Type

Type: [Menu]  [Numeric]  [Text]  [Date]  [Time]  [File Name]  [Separator]

Add  Cancel  [Help]
```

2. Select the **Menu** option and click **Add**. The following dialog appears:

```
New Menu Attribute

Attribute Name: 
Comment: 

Menu Attribute Values

Name  User Code 1  User Code 2

Add  Edit  [Delete]  [Help]
```

3. In the **Attribute Name** field, enter the text **Condition**.
4. Click **New** to enter values. The *New Attribute Value - Menu Item* dialog appears.

5. In the *Attribute Value* field, enter the text **Good**.

6. We will make this value the default. Setting a default saves field crews from entering repetitive data and also makes collecting data simpler and faster. Select the *Default* check box:

![New Attribute Value - Menu Item dialog](image)

7. Click **Add**. The value is added to the *Menu Attribute Values* group in the *New Menu Attribute* dialog:

![New Menu Attribute dialog](image)

Note that the *New Attribute Value – Menu Item* dialog remains open so you can add more values.
8. In the *Attribute Value* field, enter the text *Repair* then click *Add*.
9. Repeat Step 8 but enter the text *Replace*.
10. Click *Close* to return to the *New Menu Attribute* dialog.
11. Click *OK* to return to the *New Attribute Type* dialog.

You now need to add a Date attribute to the Trash Can feature so that the date the field crew visited the feature can be logged:

1. In the *New Attribute Type* dialog, select the *Date* option and click *Add*.
   
   The *New Date Attribute* dialog appears.
2. In the *Attribute Name* field, enter the text *Date Visited*.
3. To have the data collector automatically supply the current date when a new feature with this attribute is *collected*, make sure that the *Auto Generate on Creation* check box is selected.
4. To have the data collector automatically supply the current date when an existing feature with this attribute is *updated*, select the *Auto Generate on Update* check box.
5. In the *Format* field, select the *Day – Month – Year* option:
6. Click OK to return to the New Attribute Type dialog.

7. Click Close to return to the main Data Dictionary Editor screen.

Select the Park Amenities feature. Note that it has one attribute called Type. We will now add another attribute called Name so that the field crew can enter the name of the amenity.

To add an attribute:

1. In the Features list, select Park Amenities.
2. Click New Attribute or press [F7].

   The New Attribute Type dialog appears.
3. Select the Text option and click Add. The following dialog appears:

   ![New Text Attribute dialog]

4. In the Attribute Name field, enter the text: Name.
5. In the Length field, change the value from the default of 30 characters to 100. This is the maximum length of a text attribute.
6. Click OK to return to the New Attribute Type dialog.
7. Click Close to return to the main Data Dictionary Editor screen.
Saving the Data Dictionary

For the purposes of this tutorial, save the data dictionary with a different name to tutorial.ddf.

1. From the File menu choose Save As. The following dialog appears:

   ![Open Data Dictionary dialog](image)

   - Make sure that the Tutorial folder is selected and in the File name field, enter the following name for your changed data dictionary: Tutorial_updated.ddf.

2. Click Save.

   The name of the new data dictionary appears in the title bar of the main Data Dictionary Editor screen.

4. Select File / Exit to close the Data Dictionary Editor utility.
4 Tutorial

Importing Data From a GIS

We now need to import from our GIS the data that we want the field crews to visit and update in the field:

1. Select File / Close to close any data files that are currently open.

2. From the Utilities menu choose Import. Alternatively, click .

The Import utility starts:

![Import Utility](image)

3. In the Choose an Import Setup group, make sure that the Sample Arcview Shapefile Setup item is selected.
4. Click **Properties**. The following dialog appears:

![Import Setup Properties dialog](image)

We want to import some data from the GIS and match it with the data dictionary, which we just changed.

a. In the **Type of Data to Import** group, select the **Features with External Data Dictionary** option. The **Select Data Dictionary** group becomes available.

b. Click **Dictionary File**. The **Select Data Dictionary File** dialog appears.

c. Select the Tutorial_updated.ddf file, which is in the Tutorial folder, and click **Open**.
5. Select the *Coordinate System* tab.
   
   If the Current Coordinate System area does not have the current coordinate system selected (UTM) click *Change* and change the coordinate system. (If necessary, see page 56 for the coordinate system settings that you need to use).

6. Select the *Output* tab:

   ![Output Tab Screenshot](image)

   a. In the *Output* group, make sure that the *Combine input files into one output file* option is selected. This is because we only want to create one data file for taking back into the field for updating.

   b. Click **OK** to return to the main Import utility screen.

7. In the *Input Files* group, click **Browse**.

   The *Select GIS Data File* dialog appears.
8. Select the nine Shapefiles that were exported in Lesson 5: Exporting Data to a GIS or CAD System (these files are in the c:\Pfdata\Tutorial\Export folder) and click Open to return to the Import Utility dialog:

![Select GIS Data Files]

9. In the Output File area:

a. Make sure that the file will be stored in the C:\Pfdata\Tutorial folder. By default, the name of the file is automatically generated. You can change the name of the file, which you will now do.

   **Note** – The file itself is the same as an .ssf file except that it has a different file extension. The file extension is changed to make sure that files are not overwritten when they are transferred from the data collector back to the office. The file is named, by default, using the 24-hour clock format, YMMDDHHa, where a is the number of the file that has been created in the hour. For example, the file 0030722a.imp was created on 7 March 2000 at 22:00 hours. It is the first file created that hour.

b. Click Browse. The Specify Output File dialog appears.
c. Rename the file to `Tutorial_updated.imp`. Make sure this file is selected in the `File name` field and click `Save`. You are returned to the `Import Utility` dialog:

10. Click `OK` again. The files will be imported.
The following message appears:

![Import Completed](image)

11. Click **Close**.

The .imp file can now be transferred to the data collector so that the GIS data can be checked in the field.

**Tip** – To see a detailed log of the import process, click **More Details**.
Lesson 7: Back in the Office

The field crew have collected data on the new trash cans. They have also updated some data. You have transferred the updated file from the data collector back to the office computer (the file has been stored in the main tutorial project area). Note that this file is automatically renamed with an .ssf extension to eliminate the overwriting of files. It also makes it easy to identify which files were imported from your GIS and which were updated in the field.

Because the updated data has been collected in real-time, there is no need to differentially correct it as we did in Lesson 3: Differentially Correcting the Field Data.

Once you have opened the updated data file, you need to check the data for GPS spikes or other irregularities and edit as appropriate. Do this before you export the data to a suitable format for your GIS.

This lesson shows you how to:

- open the updated data file
- find a feature that needs repairing or replacing
- view the positions of a feature
- view new and updated features that were collected by the field crew
- view the status of a feature
- measure the distance between two features

It takes approximately fifteen minutes to complete.
Opening the Updated Data File

To open the updated data file:

1. Open the file Tutorial_Updated.ssf. (From the main GPS Pathfinder Office software select File / Open.)
2. Make sure that the Map window is open.
   If necessary, refer to Displaying the Map and Time Line Windows, page 77.

Finding a Feature

You can search for a particular type of feature or for a feature with a particular attribute value. In this case, we will search for all features with the Condition attribute set to the value of Repair or Replace.

To find a feature that needs repairing or replacing:

1. Turn on the Auto-pan to Selection tool or select View / Auto-pan to Selection.
   Finding a feature with the Auto-pan to Selection tool ensures that the Map window always displays the feature when it is found even if it is not already in the Map window.
2. Select Edit / Find Feature. The Find Feature dialog appears.
3. In the Feature field, select the first feature listed: Sign.
4. In the Attribute field, select the Condition item.
5. In the Test field, select the Not equals item.
6. In the Value field, select the Good item.
7. In the Search group, make sure the From Start option is selected:

The software searches for all Sign features that need repairing or replacing. The search starts from the beginning of the data file. This is the default when you first search for a feature. Once the first occurrence of a feature is found, the For Next option is selected.

**Tip** – To search for a particular feature that needs repairing, set the Test field to Equals and the Value field to Repair.

8. Click Find. The GPS Pathfinder Office software searches for the first feature in the file that is a Sign feature with a value that does not equal Good.

When the feature is found in the Map window it becomes the selected feature: ![Selected Feature]

**Tip** – You may find it easier to view the found features if you turn the aerial background map off.

9. Repeat the above steps to search for other features that need repairing or replacing.
Viewing the Positions of a Feature

To view the positions of a feature:

1. Select the Park Road line feature. This is inside the park area feature and starts to the right of the parking lot which is in the top left corner of the park. It runs along the right side of the parking lot, parallel with the boundary, and along the bottom of the park, ending in the bottom right corner of the park.

Tip – If you cannot find this feature, use the Find Feature tool.

2. Click the Position Properties tool or select Data / Position Properties to display the Position Properties window:

   This window displays the individual positions of the currently selected feature. It can also be used for Not in Feature positions and general map locations. Currently displayed is the first position in the Park Road feature. A small crosshair shows its position in the Map window.

3. Click >. The crosshair moves to the next position in the Park Road feature and the Position Properties window changes to show these coordinates.

   Tip – To see where the positions were logged more clearly, zoom in on the Park Road in the Map window.

4. Click >>. The crosshair jumps to the last position in the Park Road feature (position 102 of 102).

5. Click Last. The crosshair jumps to the very last position in the open file, which is in a Trash Can feature.
Using Layers to View a Feature

Layers let you determine which features are displayed in the Map and Time Line windows, and how they are displayed.

All information is grouped into layers, which can be turned off or on. For example, all notes form a layer, as does each feature defined by the data dictionary. By turning layers off or on, you can view only those items that you are interested in. The default setting is to view all layers.

Layers help you control the display of feature layers. You can:

- show or hide any particular feature layer
- select several features and show or hide them all
- select several point features and change them all to the same symbol
- select several line and area features and change them all to the same line style

To view the Bench and Trash Can point features:

1. From the View menu choose Layers / Features. The dialog opposite appears:

2. Clear the check box in the Show column next to each point feature, except for the Bench and Trash Can features and click OK.
3. The Bench and Trash Can features appear in the Map and Time Line windows, along with the line and area features to put the features in perspective. You can also see where the trash cans are located in relation to the park benches:
Viewing the Status of a Feature

Table 4.4 shows the three values for the status of a feature.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>A new feature is one that has been added to a data file in the most recent data collection session. A new data file will only contain new features.</td>
</tr>
<tr>
<td>Imported</td>
<td>An imported feature is one that previously existed in a data file and has not been edited or updated in the most recent data collection session.</td>
</tr>
<tr>
<td>Updated</td>
<td>An updated feature is one that previously existed in a data file, but has been edited or updated in the most recent data collection session.</td>
</tr>
</tbody>
</table>

To view the status of a feature:

1. Open the Feature Properties window. (From the Data menu click or choose Data / Feature Properties.)
2. Click < and > to scroll through the list of features collected.
3. View the status of each feature in the Status area near the bottom of the window:
Measuring Distances

The Measure command lets you measure distances and areas on the map. You can measure the distance between two points, or the distance along a route. To measure the distance along a route and not merely the distance as the crow flies, you measure a series of straight-line distances between points along the route. The approximate route distance is the sum of these distances. You can also measure the area enclosed by a set of points.

To measure the distance between two positions:

1. Select the Map window to make it active.
2. Click the Measure tool or select Data / Measure to activate the Measure tool.
3. Click on the Map window at the start position. The status bar changes to display the measurement information.
4. Move the mouse towards the position you want to measure to.
5. Click on the end position. The status bar displays the total distance and bearing between the positions:

| Distance 542.44 m, Bearing 55°00′38″ | Area 1.00 ha |

6. Double-click, press [Esc], or select another tool to end the measurement command.

Tip – To change the measurement units select Options / Units and change the distance measurement.
Exporting Data to Update the GIS

If you want to export an updated data file to a format that is suitable for your GIS, you would use the Export utility.

If you are going to use the Status flag to determine how to update the features in the GIS, make sure that the Update Status generated attribute is exported (In the Export dialog, click Properties and select the Attributes tab):

For more information, refer to the Export Utility Help.
Lesson 8: Special Lesson

The special lesson has no effect on the other lessons and can be done independently. It is divided into two parts. You do not have to complete both parts, and it does not matter which part you do first. The special lesson takes approximately ten minutes to complete.

In the first part of the special lesson, Batch Processing, you learn how to use the Batch Processor utility to automate repetitive tasks. This part of the lesson takes approximately five minutes to complete.

In the second part of the special lesson, Managing Waypoints, you learn how to create and view waypoints. This part of the lesson takes approximately five minutes to complete.

Batch Processing

The Batch Processor utility is a powerful tool designed to help you increase your productivity by automating repetitive tasks. This means that you can spend more time collecting data in the field.

You can set up the Batch Processor utility to transfer data, differentially correct, format, and then export files to your particular GIS system. It can also import and process your files with your GIS software, depending on the power of its own batch or macro language.

You can save your settings as a batch setup to use in future sessions. A batch setup stores information about, and specific settings for, the Data Transfer, Differential Correction, and Export functions you select. You can also associate a particular project with a batch setup.

The first part of this special lesson shows you how to:

- create a batch setup
- differentially correct files
- export corrected files
- run the Batch Processor utility

It takes approximately five minutes to complete.
To create a new batch setup and run the Batch Processor utility:

1. Click the Batch tool  
   or select Utilities / Batch Processor.
   The Batch Processor window starts, then the Batch Setup dialog
   appears:

   ![](BatchSetup.png)

2. Click **New**. The following dialog appears:

   ![](NewSetup.png)
3. In the **Setup Name** field, type a name for your batch setup. Choose a meaningful name so that you can easily identify it each time you use this batch setup. For example, use the name of your client and the date you create the setup.

4. Click **OK**. The following dialog appears:

![Batch Setup Properties](image)

The Batch Processor utility follows a wizard-style process of moving through a series of dialogs using the **Next** and **Back** buttons.

5. The first three options are selected by default but, for the purposes of this tutorial, clear the **Data Transfer** check box. This prevents the Batch Processor utility from attempting to connect to and transfer data from a data collector.

The check marks next to Differential Correction and Export indicate that, in this setup, the Batch Processor utility will differentially correct and export the selected data files.
In the Project group, the **Current project** field shows the project associated with the last-used batch setup. If you want to specify a project that will always be associated with the batch setup you are creating, select the **Selected project** option, click the drop-down arrow and choose a project from the list.

6. In the Project group, choose the **Selected project** option and make sure that the Tutorial project is selected.

7. Make sure that the **Allow files to be overwritten** check box is selected, otherwise the Batch Processor utility stops when it tries to create a file that already exists.

8. Click **Next**. The following dialog appears:

9. Make sure that the **Local Search for base files** option is selected. This automatically selects base files from the file folder of the project associated with this batch setup.

   **Note** – The folder is \Pfdata\Tutorial\Base, which is the base file folder defined for the tutorial project. This is another example of the advantages of setting up and using projects correctly.
10. Click **Next**. The following dialog appears:

![Batch Setup Properties dialog](image)

This is where you set up the options for the export part of the batch process.

11. If the **Export Setup** field does not contain the Sample ArcView Shapefile Setup that you used earlier in the Tutorial, click the drop-down arrow and select it from the list. The export folder defaults to `\Pfdata\Tutorial\Export`, which is the export folder specified for the tutorial project.

12. Click **Finish**.

   This returns you to the **Batch Setup** dialog. The dialog now shows a summary of the tasks you have just selected for this batch setup.

13. Click **Run**.
14. Because you chose not to transfer files from a data collector, the Batch Processor utility requires you to select files from the *Select Files to Process* dialog:

![Select Files to Process dialog](image)

All data files are shown in this dialog, including a set of Standard Storage Format (.ssf) files. These are files that have been collected in the field.

15. Select the files Tutdata1.ssf, Tutdata2.ssf, and Tutdata3.ssf, as follows:

a. Click Tutdata1.ssf, then, while holding down **Ctrl**, click Tutdata2.ssf and Tutdata3.ssf.

   All three data files are now highlighted.

b. Click **Open** to run the batch setup.

As the batch setup runs, a series of progress dialogs is displayed, and a record of what happened during the batch process is saved in a log file. You can refer to this log file once the batch session has finished to confirm that everything was processed as expected.
Once the session is complete, the batch log window should display the following:

This indicates that everything was processed correctly.

16. Examine the detailed log by clicking on the Details tool or selecting View / Show Details.

The detailed log shows you the input data files, the names of the automatically selected base files, and other information about the batch process. If anything goes wrong, check this log to determine what happened.

17. To save the log file:
   a. Select File / Save As.
   b. Give the file a meaningful name.
   c. Save the file in the \Pfd\data\Tutorial folder.

18. Select File / Exit to close the Batch Processor utility. You have completed processing the data files.
Managing Waypoints

Waypoints are named locations that you can record using a data collector, or create in the GPS Pathfinder Office software. Waypoints are useful for navigating to a point.

In the GPS Pathfinder Office software, waypoints are stored in files that usually have the extension .wpt. You can store as many waypoints as you like in one file.

The second part of this special lesson shows you how to:

- create a new waypoint file
- create a waypoint

It takes approximately five minutes to complete.
To create a new waypoint file:

1. Start the GPS Pathfinder Office software and open the Tutorial project.
2. Select View / Map to display the Map window.
3. Select File / Waypoints / New. The following dialog appears:

   ![New Waypoint File dialog]

   By default, the new waypoint file is named using the current date and time in the 24-hour clock format, wMMDDHHa, where w is the waypoint file identifier and a is the number of the file that was created in that hour. For example, the file w042810a.wpt was created on 28 April at 1000 hours. It was the first file created in that hour.

4. If you want, change the filename and the current folder, then click **OK**.
The Waypoint Properties dialog opens automatically when you open a waypoint file:

Using the Waypoint Properties dialog you can create new waypoints, edit existing waypoints, or delete waypoints from the waypoint file.

5. Click Create. The following dialog appears:

6. Select the Pick From Map check box.
   If the Map window has no files displayed in it, the Pick From Map field is unavailable.
To display files in the Map window:

a. Select File / Background. The following dialog appears:

![Load Background Files dialog]

b. Click Add. The following dialog appears:

![Add Background Files dialog]

c. Select the three .cor files (or the first three .ssf files if no .cor files are available).
d. Click Open to return to the Load Background Files dialog.

e. Click OK.

Progress bars will show that the files are loading, then the map will display the features from the data files.

7. Click anywhere in the Map window (for example, on a feature that you want to revisit).

The North, East, and Altitude fields have been filled in with the coordinate of the location that you clicked on:

8. If you want, change the default waypoint name to a more meaningful name, and click Save to save this as a waypoint.

9. Click Close to close the Create Waypoint window.

The Waypoint Properties window reappears with the waypoint you just created displayed in the list on the left. The waypoint appears as a crossed-flag symbol on the map.

10. Select File / Waypoints / Close to close the waypoint file. It is now saved permanently on the disk.

In a real situation, you can create as many waypoints as required, and then transfer the waypoint file to the data collector using the Data Transfer utility. You can then navigate your way (back) to these waypoints.
Note – You can create any number of waypoints in one file, but a GeoExplorer® or GeoExplorer II data collector can store a maximum of 99 waypoints. For a GPS Pathfinder Basic series GPS receiver, the limit is 999 waypoints. For a data collector running the Asset Surveyor® software, the limit is 32767 waypoints. There is no limit to the number of waypoints that can be stored by the ASPEN® software, the TerraSync software, or the GeoExplorer 3 handheld data collector.