

QGIS: Digitizing I - Creating New Shapefiles

Windows: QGIS 2.18.12
Mac: QGIS 2.18.2

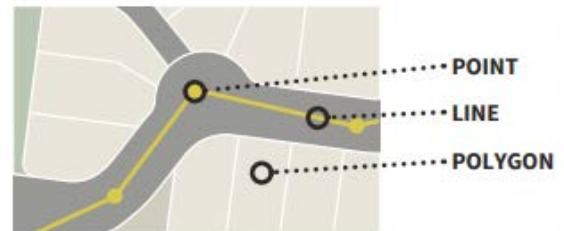
Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

A shapefile is a vector file format used in GIS mapping to represent real world objects by storing information about their location, shape, and attributes of geographic features on a map. There are three basic types of shapefiles: a point, a line, and a polygon. A point file is a single x,y coordinate that represents a geographic feature. Depending on the scale of the map points can represent a variety of objects including cities, wind turbines, or garbage cans. Lines represent features that have length and direction but no area that connect at least two x,y coordinates. Common examples include roads, water lines, and rivers. A polygon is a two-dimensional closed figure with at least three sides that represent an area. Polygons are used to show buildings, agricultural fields, or other boundaries.

The Finkbine golf course in Iowa City asked you to help them review the paths, fairway, green area, and mark the hole for two holes of the golf course. In this tutorial, you will create shapefiles to represent course features - fairway, golfing green areas, and sand traps (polygon), the golf cart paths (line), and golf hole (point).

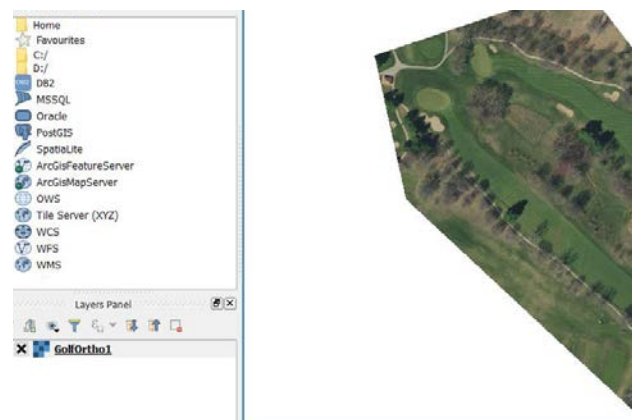
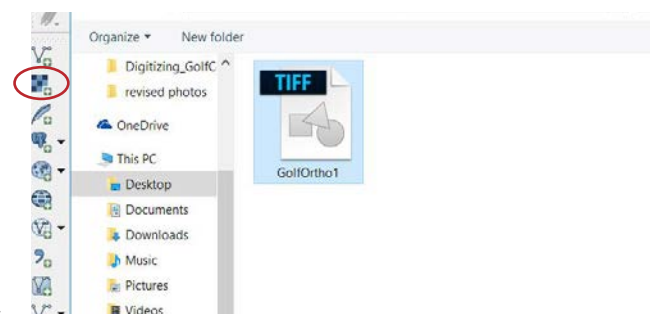
1. Getting Started

- Download the data used in this tasksheet by navigating to <http://issueogtp.github.io/GISTaskSheets/TaskSheetData/PM2082-171.zip> in a web browser. The files for this tutorial will automatically download. When the download is complete, copy the files into your working directory.
- Open **QGIS**. In the **Menu** bar, select **Project > New**. Click the **Add Raster Layer** option. Select **GolfOrtho1.tiff** and click **Open**.
- An aerial image of a portion of the Finkbine Golf Course will be displayed which you will be using to digitize fairways, golf greens, and sand traps.



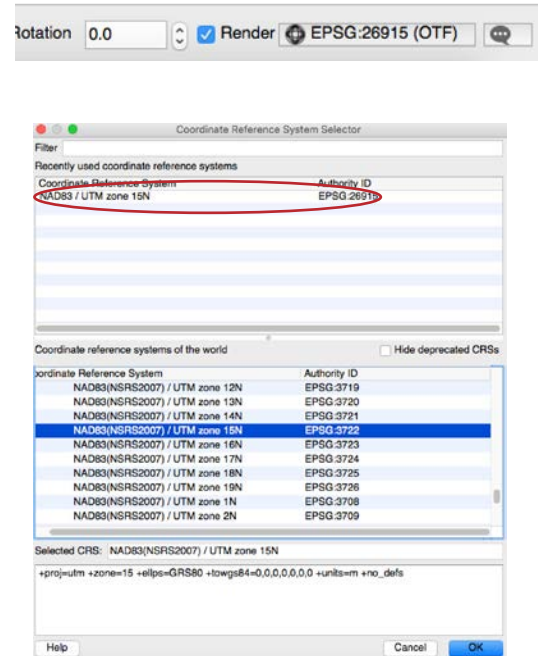
2. Creating a New Polygon Shapefile

- Before digitizing, you need to create a new shapefile. In the **Menu** bar, select **Layer > Create Layer > New Shapefile Layer...**. The **New Shapefile Layer** window will appear.
- Under **Type**, select **Polygon**. Leave the default **File encoding** option. In the next drop-down menu, set the coordinate system to **EPSG:26915-NAD83 / UTM zone 15N**. You may need to click the **Select CRS** icon next to the drop-down menu. When the window appears, type **EPSG:26915** in the **Filter** text box and select the correct coordinate system. Click **OK**.



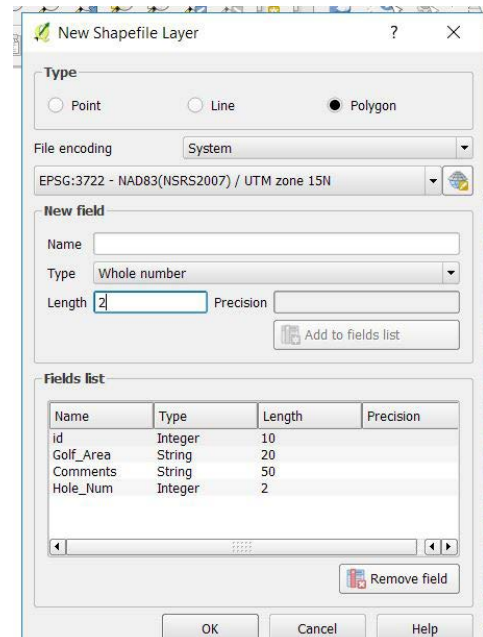
Note: It is good practice that the coordinate system you select should match the coordinate system listed in the bottom-right corner of your QGIS Project.

- In the **New Field** section, add a new field to the attribute table by filling in the following fields: **Name: Golf_Area**, **Type: Text data**, **Length: 20**. Click **Add to fields list** and **Golf_Area** will appear in the **Fields List** below. This field will be used to designate the type of golf area (green, fairway, or sandtrap) that you are digitizing. The **Type** option defines the field type as text, and the **Length** option defines the length of text characters allowed for the **Golf_Area** attribute field.
- Follow the procedures in **step 2c** to create two new fields with the following attributes: **Name: Comments**, **Type: Text data**, and **Length: 50**, and **Name: Hole_Num**, **Type: Whole number**, and **Length: 2**.
- Confirm your **Fields list** looks as it does in the image to the right and click **OK**. A **Save layer as...** window will appear. Navigate to the folder where your project data is saved. Name the layer **CoursePolygons**. *Note: After creating a new shapefile, it will be automatically added to the map.*



3. Creating New Line and Point Shapefiles

- Follow the procedures in **step 2a-2b** to create a line shapefile with **Type: Line**, and coordinate system set to **EPSG:26915-NAD83 / UTM zone 15N**. Save the layer as **Golf_Path**. *Note: This shapefile doesn't require any new attribute fields to be created.*
- Create a point shapefile with **Type: Point** and coordinate system set to **EPSG:26915-NAD83 / UTM zone 15N**, and add the following new attribute field: **Name: Hole_Num**, **Type: Whole number**, and **Length: 2**. Save the layer as **Golf_Hole**.
- In the **Menu** bar, select **Project > Save as** and save your map as **Digitizing_GolfCourseCompleted.qgs**.
- Continue on to **PM2082-17m** (*QGIS: Digitizing II – Editing Shapefiles in QGIS*) to begin digitizing features of Finkbine Golf Course.



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