Certainly! Below is a step-by-step guide for completing each of the tasks in QGIS:

### Task 1: Georeference the 7 zone topo map in degrees, compress it to LZW, and save it in the appropriate folder

1. \*\*Open QGIS\*\*:

Launch QGIS on your computer.

2. \*\*Add Raster Image\*\*:

- Go to `Raster` -> `Georeferencer` -> `Georeferencer...`.

- In the Georeferencer window, click `Open Raster` (folder icon) and select your topo map image.

3. \*\*Set Transformation Settings\*\*:

- Click the `Settings` menu in the Georeferencer window.

- Set the `Transformation type` to `Polynomial 1` (or another appropriate method).

- Set the `Resampling method` to `Nearest neighbour`.

- Set the `Target SRS` to a geographic coordinate system (e.g., WGS 84 - EPSG:4326).

4. \*\*Add Control Points\*\*:

- Click the `Add Point` tool (green cross) and add control points by clicking on known locations on the map and entering their coordinates in degrees.

5. \*\*Start Georeferencing\*\*:

- Click the `Start Georeferencing` button (green play icon) to perform the transformation.

6. \*\*Save Georeferenced Map\*\*:

- In the dialog that appears, set the output filename and choose `LZW` for the compression method.

- Save the file in the appropriate folder.

### Task 2: Create a shapefile with line geometry, assign projection, import background map, and digitize the river

1. \*\*Create Shapefile\*\*:

- Go to `Layer` -> `Create Layer` -> `New Shapefile Layer...`.

- Set the `File name` to `mdinare.shp` and save it in the appropriate folder.

- Set `Geometry type` to `Line`.

- Set `CRS` to EPSG:32638 (or EPSG:32637, depending on the location).

2. \*\*Add Background Map\*\*:

- Go to `Web` -> `QuickMapServices` -> `OSM` (or another preferred basemap).

- If `QuickMapServices` is not installed, go to `Plugins` -> `Manage and Install Plugins`, search for `QuickMapServices`, and install it.

3. \*\*Digitize the River\*\*:

- Right-click on the `mdinare` layer and select `Toggle Editing`.

- Use the `Add Line Feature` tool to digitize the river by drawing the line on the map.

- Right-click to finish the line, then save the changes by clicking `Toggle Editing` again and confirming the save.

### Task 3: Import coordinates from an Excel table and export as vector dot shapefile

1. \*\*Open the Excel File\*\*:

- Go to `Layer` -> `Add Layer` -> `Add Delimited Text Layer...`.

- Browse to the Excel file in the GPS folder and select it.

- Ensure the correct delimiter is set (e.g., comma or tab).

2. \*\*Set CRS\*\*:

- In the `Geometry Definition` section, set the X and Y fields to the appropriate columns in your table.

- Set the CRS to the projection you need.

3. \*\*Import Data\*\*:

- Click `Add` to import the data into QGIS.

4. \*\*Export as Shapefile\*\*:

- Right-click on the newly added layer and select `Export` -> `Save Features As...`.

- Set the `Format` to `ESRI Shapefile`.

- Choose a file name and location in the appropriate folder.

- Set the CRS and click `OK`.

### Task 4: Import GeoTaggedPhoto and export as vector point shapefile

1. \*\*Import the GeoTagged Photo\*\*:

- Go to `Raster` -> `Miscellaneous` -> `Import Geotagged Photos`.

- Browse to the image in the GeoTaggedPhoto folder and import it.

2. \*\*Set CRS\*\*:

- Ensure the CRS is set to WGS 84 - EPSG:4326.

3. \*\*Export as Shapefile\*\*:

- Once the photo is imported and displayed as a point layer, right-click on the layer and select `Export` -> `Save Features As...`.

- Set the `Format` to `ESRI Shapefile`.

- Choose a file name and location in the appropriate vector folder.

- Click `OK` to save the shapefile.

Sure! Below is a detailed guide to organize the folder structure, place files in the appropriate folders, and perform the tasks in QGIS:

### Task 5: Organize Folder Structure and Sort Files

#### 5.1) Organize the Folder Structure

1. \*\*Create Main Folders\*\*:

- \*\*Geodatabase\*\*: For storing geodatabases (.mdb, .gdb, .sqlite).

- \*\*Shp\*\*: For vector files (.shp).

- \*\*Raster\*\*: For raster data (images, aerial photographs).

- \*\*Documents\*\*: For documents (Excel, Word, PDF, PowerPoint).

- \*\*Project\*\*: For QGIS project files (.qgz).

- \*\*GPS\*\*: For coordinates and GPS data.

- \*\*CAD\*\*: For CAD files (.dxf, .dwg).

- \*\*KML/KMZ\*\*: For Google Earth/Maps formats.

- \*\*Styles\*\*: For QGIS styles (.qml).

- \*\*Metadata\*\*: For metadata files (.qmd).

- \*\*Bookmark\*\*: For bookmarks.

- \*\*Layouts\*\*: For QGIS Composer Templates (.qpt).

- \*\*GCP Points\*\*: For Ground Control Points from georeferencing.

- \*\*Fonts\*\*: For fonts used in the project.

- \*\*HTML\*\*: For HTML files.

If necessary, you can add or remove folders based on the files you have.

#### 5.2) Put the Files in the Appropriate Folders

1. \*\*File Types and Folders\*\*:

- \*\*.qpt\*\* -> Layouts

- \*\*.qgz\*\* -> Project

- \*\*.qml\*\* -> Styles

- \*\*.qmd\*\* -> Metadata

- \*\*.xml\*\* -> Bookmark (or if it serves a different function, appropriate folder)

- \*\*.mdb, .gdb, .sqlite\*\* -> Geodatabase

- \*\*.dxf, .dwg\*\* -> CAD

- \*\*.kml, .kmz\*\* -> KML/KMZ

- \*\*.shp\*\* -> Shp

- \*\*Documents\*\* -> Any Word, Excel, PDF, PowerPoint files.

- \*\*Raster\*\* -> Any image files used as raster data.

- \*\*GCP Points\*\* -> Ground Control Points files.

- \*\*Fonts\*\* -> Font files.

- \*\*HTML\*\* -> HTML files.

#### 5.3) Add or Delete Folders if Necessary

- \*\*Add Missing Folders\*\*: If any required folder is missing, add it.

- \*\*Delete Unnecessary Folders\*\*: If any folder is not needed and does not contain important files, delete it.

### Task 6: Import Shapefile and Use Bookmark XML to Find and Export Path Length

#### 6.1) Import `gza.shp` from the Bookmark Folder

1. \*\*Open QGIS\*\*:

- Launch QGIS on your computer.

2. \*\*Add Shapefile Layer\*\*:

- Go to `Layer` -> `Add Layer` -> `Add Vector Layer...`.

- Browse to the Bookmark folder and select `gza.shp`.

3. \*\*Find Bookmark Path Using XML\*\*:

- Open the `gza.xml` file in a text editor.

- Look for the path details specified as a bookmark.

4. \*\*Calculate Path Length\*\*:

- Use the `Field Calculator` in QGIS to calculate the length of the path if needed.

- Format the length as a decimal number.

#### 6.2) Export the Marked Path to Mapinfo TAB Format

1. \*\*Export Layer\*\*:

- Right-click on the `gza` layer and select `Export` -> `Save Features As...`.

- Choose `Mapinfo File` as the format.

- Save the file in the appropriate folder.

#### 6.3) Open Project and Create an Exposure from the Terrain

1. \*\*Open Project\*\*:

- Go to `Project` -> `Open...`.

- Open the project file from the Project folder.

2. \*\*Add DEM.tif\*\*:

- Ensure `DEM.tif` is added to the project.

3. \*\*Create Exposure from Terrain\*\*:

- Go to `Raster` -> `Terrain Analysis` -> `Hillshade`.

- Set parameters and create the exposure.

- Save changes to the project.

#### 6.4) Create a Bookmark, Calculate Area, and Export

1. \*\*Create Bookmark\*\*:

- Create a new bookmark for the exposure area.

2. \*\*Calculate Area\*\*:

- Use the `Field Calculator` to calculate the area.

3. \*\*Export Area\*\*:

- Export the area to the appropriate folder.

### Task 7: Open Project and Create New Road Layer

#### 7.1) Create New Road Layer

1. \*\*Open Project\*\*:

- Open `gza\_project.qgz` from the Project folder.

2. \*\*Create Road Layer\*\*:

- Go to `Layer` -> `Create Layer` -> `New Shapefile Layer...`.

- Set the layer type to `Line` and add a field for the length as a decimal number.

3. \*\*Digitize Road\*\*:

- Use the `Add Line Feature` tool to draw the road.

4. \*\*Calculate Length\*\*:

- Use the `Field Calculator` to calculate the length and save it to the appropriate field.

5. \*\*Save Road Layer\*\*:

- Save the layer and create a bookmark.

#### 7.2) Export Road Layer Style

1. \*\*Export Style\*\*:

- Right-click on the road layer and select `Export` -> `Save Style...`.

- Save the style file in the Styles folder.

#### 7.3) Export Road Layer to GML Format

1. \*\*Export Layer\*\*:

- Right-click on the road layer and select `Export` -> `Save Features As...`.

- Choose `GML` as the format.

- Save the file in the appropriate folder.

#### 7.4) Open Project and Create Terrain Shading

1. \*\*Open Project\*\*:

- Open `DEM\_project.qgz` from the Project folder.

2. \*\*Add DEM.tif\*\*:

- Ensure `DEM.tif` is added to the project.

3. \*\*Create Terrain Shading\*\*:

- Go to `Raster` -> `Terrain Analysis` -> `Hillshade`.

- Set the light azimuth to `215.0` and light height to `35.0`.

- Save the shading to the project.

4. \*\*Mark Points and Export GML\*\*:

- Use the attribute table to filter and mark points with height between 1500 and 1800.

- Export the marked points to GML format.

### Task 8: Import GeoNode WFS Service and Export KML

1. \*\*Import WFS Service\*\*:

- Go to `Layer` -> `Add Layer` -> `Add WFS Layer...`.

- Add the GeoNode WFS service URL.

2. \*\*Select and Export Plots\*\*:

- Filter the plots with an area greater than 100.

- Export the selected plots to KML format.

- Save the file in the appropriate folder.

### Summary of Folder Structure

- \*\*Geodatabase\*\*: .mdb, .gdb, .sqlite

- \*\*Shp\*\*: .shp

- \*\*Raster\*\*: Raster data (images, aerial photographs)

- \*\*Documents\*\*: Word, Excel, PDF, PowerPoint files

- \*\*Project\*\*: .qgz (QGIS project files)

- \*\*GPS\*\*: Coordinates and GPS data

- \*\*CAD\*\*: .dxf, .dwg

- \*\*KML/KMZ\*\*: .kml, .kmz

- \*\*Styles\*\*: .qml

- \*\*Metadata\*\*: .qmd

- \*\*Bookmark\*\*: .xml (if used for bookmarks)

- \*\*Layouts\*\*: .qpt

- \*\*GCP Points\*\*: Ground Control Points files

- \*\*Fonts\*\*: Font files

- \*\*HTML\*\*: HTML files

This guide should help you effectively organize the files and complete the tasks using QGIS. If you need any more specific details or run into issues, feel free to ask!