



Department of Computer Technology

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration. **Mission of the Department**

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: Dream of where you want.	Mission: Means to achieve Vision
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Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	Preparation	P: Preparation	Pep-CL abbreviation pronounce as Pep-si-IL easy to recall
PEO2	Core Competence	E: Environment (Learning Environment)	
PEO3	Breadth	P: Professionalism	
PEO4	Professionalism	C: Core Competence	
PEO5	Learning Environment	L: Breadth (Learning in diverse areas)	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:

Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

“I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life.” to contribute to the development of cutting-edge technologies and Research.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Name and Signature of Student and Date

(Signature and Date in Handwritten)



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Session	2025-26 (ODD)	Course Name	PE-I - Geo-Intelligence for Smart IoT Devices Lab
Semester	5	Course Code	23IOT1523
Roll No	37	Name of Student	Dhanashri Raut

Practical Number	03
Course Outcome	Apply and demonstrate the use of proprietary and open-source GIS tools (e.g., QGIS) for creating, visualizing, and managing spatial datasets.
Aim	Create a GeoPackage or shapefiles and digitize point/line/polygon features on QGIS interface.
Problem Definition	The task requires creating a GeoPackage or shapefile in QGIS and digitizing point, line, and polygon features using the software's editing tools.



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Theory (100 words)	<p>In Geographic Information Systems (GIS), spatial data can be represented using vector models, where real-world objects are described with geometric shapes. These datasets are usually stored in formats such as shapefiles or GeoPackages. A shapefile is actually a collection of several files (.shp, .shx, .dbf, .prj) that together hold the feature geometry and its attributes. On the other hand, a GeoPackage is a single file capable of storing multiple vector and raster layers, making it easier to organize and share data.</p> <p>Vector data can represent different kinds of features based on geometry:</p> <ul style="list-style-type: none">• Point: Represents a single location, e.g., a lamp post, borewell, or survey point.• Multipoint: A group of points treated as one object, such as a set of poles or tree clusters.• Line: Used for linear elements like highways, rivers, or cables.• Polygon: Defines closed areas, such as administrative boundaries, fields, lakes, or forests. <p>The process of drawing these features directly onto a digital map is called digitizing. In tools like QGIS, users can create a new vector layer, choose the desired geometry type, and then sketch the features using editing functions. Each feature can also have attribute data (like IDs, names, or categories) attached to it for further description.</p>
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	<p>Digitizing is a crucial step because it converts information from sources such as surveys, aerial photos, or scanned paper maps into digital GIS layers. By building layers of points, lines, and polygons in shapefiles or GeoPackages, GIS professionals can conduct spatial analysis, detect patterns, and manage data effectively for applications like city planning, infrastructure projects, or environmental studies.</p>
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<p>Procedure and Execution</p> <p>(100 Words)</p>	<p>Implementation Steps:</p> <p>Launch QGIS and set up a new layer as either a GeoPackage or Shapefile.</p> <p>↓</p> <p>Specify the feature type (Point, Multipoint, Line, or Polygon), select the CRS, and create necessary attribute fields.</p> <p>↓</p> <p>Activate the layer in the Layers panel to allow editing. ↓ Turn on editing mode using the pencil icon or right-click options.</p> <p>↓</p> <p>Digitize features on the map by placing points, drawing multipoints, lines, or polygons.</p> <p>↓</p> <p>Fill in the attribute details for each feature as prompted. ↓ Save your edits and exit editing mode to lock the changes.</p> <p>↓</p> <p>Check both the map and the attribute table to ensure accuracy of features and data.</p> <p>↓</p> <p>Optionally, overlay a base map for more precise placement of features.</p>



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Output Analysis	The newly created layer successfully captured points, multipoints, lines, and polygons on the QGIS map canvas. Attribute data for each feature was correctly recorded, and the spatial placement aligned well with the base map. The digitized features retained their geometry and associated information, confirming that the editing and saving process worked as intended.
Link of student Github profile	



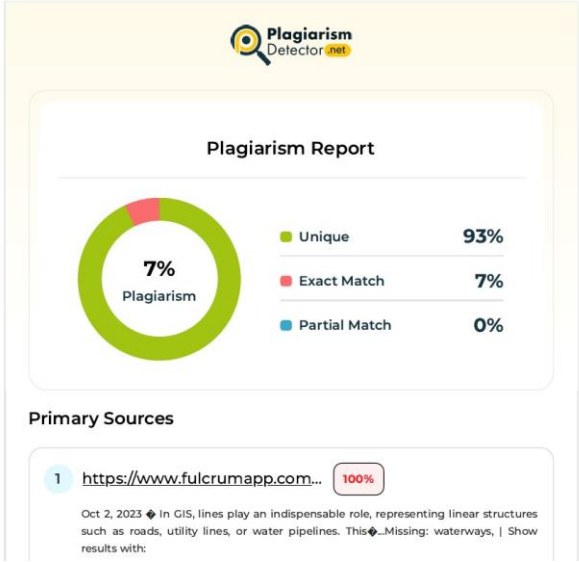
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where lab assignment has been uploaded	
Conclusion	Creating and digitizing vector features in QGIS, such as points, multipoints, lines, and polygons, is a key process for converting real-world geographic data into digital formats. This involves defining the correct Coordinate Reference System (CRS) and attributes for each feature. The digitized data can then be used for various applications, including mapping, analysis, and decision-making in fields like urban planning, environmental science, and infrastructure management. Essentially, you're translating geographical information from the physical world into a structured, digital format that's useful for a wide range of analytical purposes.
Plag Report (Similarity index < 12%)	<p>7%</p>  <p>Plagiarism Report</p> <p>7% Plagiarism</p> <ul style="list-style-type: none">Unique: 93%Exact Match: 7%Partial Match: 0% <p>Primary Sources</p> <p>1 https://www.fulcrumapp.com... 100%</p> <p>Oct 2, 2023 In GIS, lines play an indispensable role, representing linear structures such as roads, utility lines, or water pipelines. This...Missing: waterways, Show results with:</p>
Date	14/08/2025