



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

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| 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)

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| 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 |

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|---------------------------|---|
| Practical Number | 01 |
| Course Outcome | Install/verify QGIS, explore interface, and understand open-source vs proprietary GIS features. |
| Aim | Create a GeoPackage or shapefiles and digitize point/line/polygon features on QGIS interface. |
| Problem Definition | The task is to install and verify QGIS on a computer system, explore its userinterface to become familiar with the essential tools, and understand the differences between open-source GIS software and proprietary GIS platforms. (Discuss about 10 open source and proprietary software.) |



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| <p>Theory (100 words)</p> | <p>1. Installing and Verifying QGIS</p> <ul style="list-style-type: none">• QGIS is a free, open-source GIS software.• Installation steps:<ol style="list-style-type: none">1. Download the latest version from the QGIS official website.2. Run the installer and complete setup.3. Launch QGIS to verify installation.• Verification includes checking the splash screen, confirming version number, and opening a sample project or sh <p>2. Exploring QGIS User Interface</p> <p>The QGIS interface consists of:</p> <ul style="list-style-type: none">• Menu Bar: Access to project, layers, settings, and analysis tools.• Toolbars: Quick access to frequently used functions (zoom, pan, select).• Layers Panel: Manage visible layers and their order.• Browser Panel: Access files, databases, and web services.• Map Canvas: Displays the spatial data.• Status Bar: Shows coordinates, scale, and CRS. <p>Difference Between Open-Source and Proprietary GIS</p> <ul style="list-style-type: none">• Open-Source GIS: Free to use, community-driven, flexible with plugins, supports a wide variety of formats, but may lack official support.• Proprietary GIS: Paid software, commercially supported, advanced features, and seamless enterprise integration, but with license costs and limited customization. |
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| | <p>Examples of GIS Software</p> <p>Open-Source GIS Software (10 examples)</p> <ol style="list-style-type: none">1. QGIS – user-friendly, highly extensible.2. GRASS GIS – advanced geospatial analysis.3. gvSIG – desktop GIS with CAD-like tools.4. uDig – Java-based GIS platform.5. MapServer – web mapping tool. <p>Proprietary GIS Software</p> <ol style="list-style-type: none">1. ArcGIS (ESRI) – industry-leading platform.2. MapInfo Professional – powerful desktop GIS.3. ERDAS IMAGINE – remote sensing and raster analysis.4. Global Mapper – 3D visualization and terrain modeling.5. GeoMedia (Hexagon) – enterprise GIS management. |
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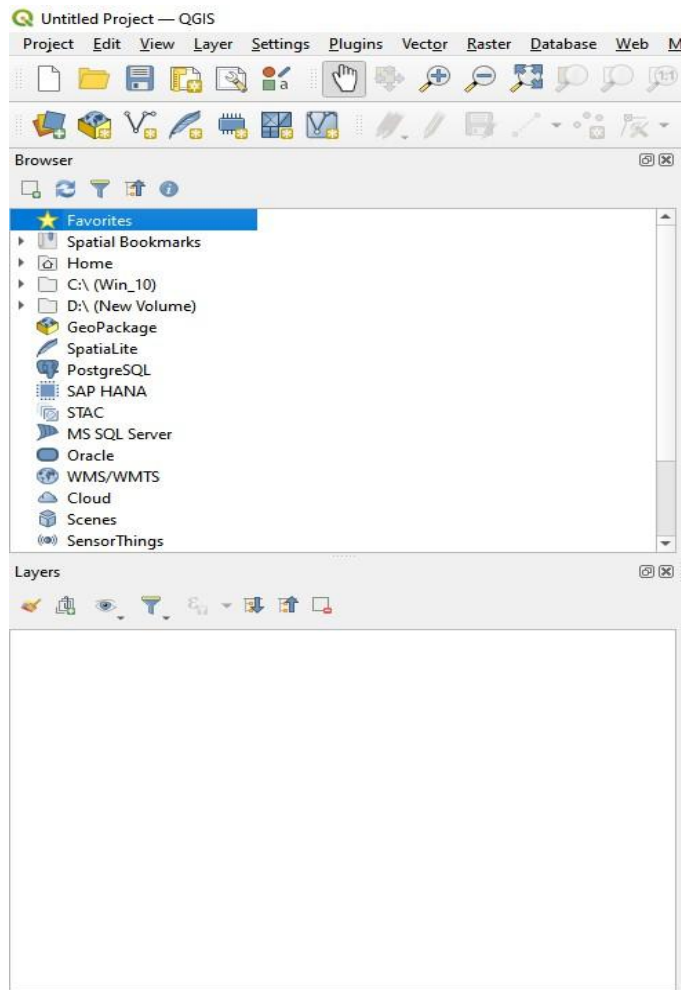
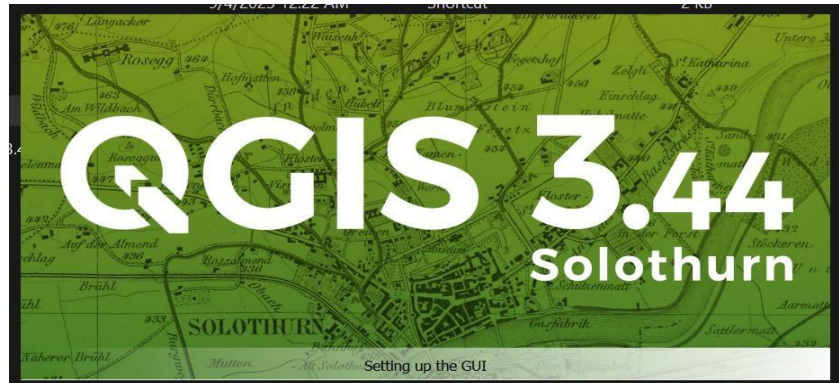
| | |
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| Procedure and Execution (100 Words) | <p>Implementation Steps:</p> <ul style="list-style-type: none"><input type="checkbox"/> Install QGIS – Download QGIS from the official website and complete installation.<input type="checkbox"/> Verify Installation – Open QGIS and confirm version details by loading a sample project or shapefile.<input type="checkbox"/> Explore Interface – Identify key components such as Menu Bar, Toolbars, Layers Panel, Browser Panel, and Map Canvas.<input type="checkbox"/> Load and Inspect Data – Add a shapefile, check its metadata (CRS, extent, attributes), and visualize it on the map.<input type="checkbox"/> Reproject and Compare – Reproject the shapefile into a different CRS and analyze the differences between open-source (QGIS, GRASS) and proprietary (ArcGIS, ERDAS) GIS platforms. |
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Stepwise Screenshots with steps:



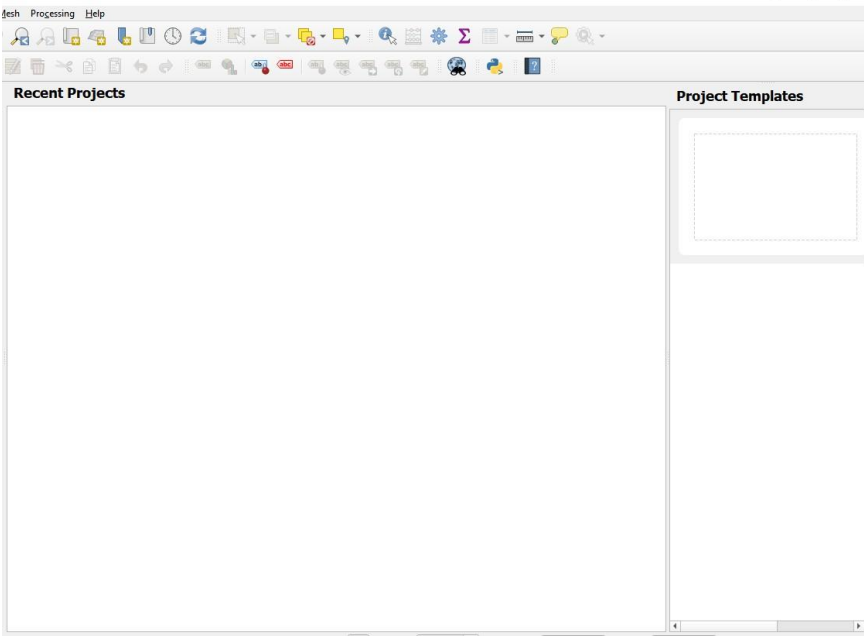


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| Output Analysis | The newly created layer successfully captured points, multipoints, lines, and polygons on the QGIS map canvas. Attribute data for each feature was correctly recorded, and the spatial placement aligned well with the base map. The digitized features retained their geometry and associated information, confirming that the editing and saving process worked as intended. |
| Link of student Github profile | https://github.com/24030192-lab/PE-.git |



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| where lab assignment has been uploaded | | | | | | | | | |
| Conclusion | <p>This practical demonstrated how to create and digitize vector features in QGIS, including points, multipoints, lines, and polygons. It highlighted the importance of setting the correct CRS, defining attributes, and accurately placing features. Digitizing allows real-world geographic information to be transformed into digital GIS layers, which can be used for analysis, mapping, and decision-making in applications such as urban planning, environmental monitoring, and infrastructure management.</p> | | | | | | | | |
| Plag Report (Similarity index < 12%) | <div><div>14%</div><div><div>SmallSEOTools</div><div>Plagiarism Detection Report by SmallSEOTOOLS</div><div><div><div><div><div></div><div>14%</div></div></div><div><div>Plagiarism</div><div>14%</div><div>Partial Match</div><div>14%</div><div>Exact Match</div><div>0%</div><div>Unique</div><div>86%</div></div></div><div><div>Scan details</div><table><tr><td>Total Words</td><td>Total Characters</td><td>Plagiarized Sentences</td><td>Unique Sentences</td></tr><tr><td>349</td><td>2305</td><td>2.1</td><td>12.9 (86%)</td></tr></table><div><div>Plagiarism Results: (2)</div><div><div>#1 7% Similar</div><div>https://www.reddit.com/r/selfhosted/comments/14e...</div><div>• Browser Panel: Access files, databases, and web services.</div></div><div><div>#2 7% Similar</div><div>https://www.youtube.com/watch%3Fy%3D4yqCiE2...</div><div>• Explore Interface – Identify key components such as Menu Bar, Toolbars, Layers Panel, Browser Panel, and Map Canvas.</div></div></div></div></div></div></div> | Total Words | Total Characters | Plagiarized Sentences | Unique Sentences | 349 | 2305 | 2.1 | 12.9 (86%) |
| Total Words | Total Characters | Plagiarized Sentences | Unique Sentences | | | | | | |
| 349 | 2305 | 2.1 | 12.9 (86%) | | | | | | |
| Date | 09/09/25 | | | | | | | | |