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## **WP3**

# **Development of the Labour Market Observatory in Vietnam**

### **Outcome 3.1**

### **Analysis of the data from WP2**

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## 1.1. Programmer

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Programmer/ Software Engineer
<b>Where it works</b>
Technical Departments, Software Development Departments
<b>The activities</b>
<ul style="list-style-type: none"><li>- Analyse customer needs.</li><li>- Write and test codes for computer programs, websites and mobile applications.</li><li>- Develop technical solutions to customer requirements.</li><li>- Update and optimise existing software and applications.</li><li>- Support end-users about software problems.</li><li>- Maintain and troubleshoot software and systems.</li></ul>
<b>Qualifications</b>
<ul style="list-style-type: none"><li>- At least Bachelor's degree in computer and information technology areas such as Computer Science, Software Engineering, Information Technology.</li><li>- For an entry/fresher level, no experience is required. For junior level, 1 or 2 years of experience are required. For a more senior level, more than 4,5 years of experience are required.</li></ul>
<b>Technical skills</b>
Depending on a particular position, a programmer is required to be familiar with or an expert in a certain programming framework, platform, software, and language such as Android, iOS, Java, PHP, NET, C#.
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"><li>- Teamwork and cooperation skills</li><li>- Communication skill</li><li>- Goal management skill</li></ul>

<ul style="list-style-type: none"> <li>- Problem solving skill</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details</li> </ul>
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study small techniques of function point or easy tasks (fresher or internship level).</li> <li>- Code some mini tasks or small projects (junior level).</li> <li>- Code full mini project or some task, and self-give technical solution (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated in Software Engineer with Bachelor's degree. If you are interested in software, you could study in software education centers and go to work.
<b>Academic qualification - II level</b>
<p>Front-End: have good knowledge and experience in HTML, CSS, JQuery, JavaScript, ...</p> <p>Back-End: have good knowledge and experience in C#, Java, PHP, NodeJS, Golang, ...</p> <p>Framework: Angular, React, Vue, Laravel, .net core, Sharepoint, Odoo, Magento, ...</p> <p>Database: SQL server, MySQL, Oracle, Postgree, NoSQL, DB2, ...</p> <p>Design pattern: SOLID, MVC, MVVM, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

## 1.2. QC Staff/Tester

SECTION 1	
<b>Name of the professional figure</b>	
QC/Tester	
<b>Where it works</b>	
ICT enterprises, Technical Departments, Software Development Departments, Software Testing Department, Quality Assurance Department.	
<b>The activities</b>	
<ul style="list-style-type: none"> <li>- Analyse design documents.</li> <li>- Work with the software development team to develop testing strategies.</li> <li>- Develop and write test cases, checklist.</li> <li>- Execute testing, detect defects, log defects in the defect tracking system.</li> <li>- Report test results.</li> <li>- Investigate defect reports and work with developers to correct.</li> </ul>	
<b>Qualifications</b>	
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Computer Science, Software Engineering, Information Technology.</li> <li>- For an entry level, no experience is required. For a more senior level, 3 or more years of experience are required.</li> </ul>	
<b>Technical skills</b>	
Knowledge of testing methodology, tools, and testing management software such as Agile methodology, Katalon, Selenium.	
<b>Computer and linguistic knowledge</b>	
Communication in English at basic level	
<b>Personality and availability</b>	
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills</li> <li>- Communication skill</li> <li>- Goal management skill</li> <li>- Problem solving skill</li> </ul>	

- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study technique skills and business processes (fresher or internship level).</li> <li>- Create scripts for manual testing (junior level).</li> <li>- Code or implement for automation testing (senior level).</li> </ul>
<b>Academic qualification - I level</b>
Candidates graduated with a Bachelor's degree in Software Engineer or other field related IT, and the must spend a lot of time exploring the usage of many applications.
<b>Academic qualification - II level</b>
Have good knowledge and experience in usage applications. Good at script and code in automation test tool is an advantage.
<b>Academic qualification - III level</b>
Candidates study some testing courses in Selenium, Katalon or similar.

### 1.3. IT Engineer/ IT Staff

<b>SECTION 1</b>
<b>Name of the professional figure</b>
IT Engineer/IT Staff
<b>Where it works</b>

Technical Departments, IT Departments
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Maintain computer systems and networks.</li> <li>- Identify and recover errors and incidents relating to software, hardwares and networks.</li> <li>- Set up software and support end-users in using software.</li> <li>- Install network equipment and other IT equipment.</li> <li>- Operate websites and recover website incidents.</li> <li>- Support network administrator in operating server systems.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Information Technology, Computer Engineering Technology, Computer Network and Data Communication.</li> <li>- An experience in IT support is often preferred.</li> </ul>
<b>Technical skills</b>
<p>Knowledge of CMS frameworks (Wordpress, Joomla), network services (domain, SQL, VPN), common office software (MS Office), web programming, office computer and network equipment. A certificate on network administration (such as MCSA, MCITS, CCNA, CCNP) is a plus.</p>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>
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<b>SECTION 2</b>

<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study technology and skill mini tasks (fresher or internship level).</li> <li>- Do easy tasks (junior level).</li> <li>- Build system architecture or solution, troubleshooting difficult issues (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated with a Bachelor's degree in IT.
<b>Academic qualification - II level</b>
<p>Help desk: computer troubleshooting, customer services, CompTA+</p> <p>Networking: CCNA or CCNP certificate. Have knowledge about other vendors' technology such as Paloalto, Fortigate, Draytek , ... Candidates can self-study with documents of the manufacturer.</p> <p>System: MCSA, MCTS, LPI, Office 365 suite, AWS, cloud computing, Sharepoint, Oracle EBS, Microsoft exchange, Microsoft Dynamic AX, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost all of them study from vendor materials or real projects.

#### 1.4. Data Engineer

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Data Engineer
<b>Where it works</b>
Technical Departments, Software Development Departments, IT Department, R&D Department, AI Center, AI Department.



<b>The activities</b>
<ul style="list-style-type: none"> <li>- Analyse customer requirements.</li> <li>- Design data warehouses.</li> <li>- Develop ELT tools and database pipelines.</li> <li>- Develop algorithms to transform data into useful information.</li> <li>- Create new data validation methods and data analysis tools.</li> <li>- Implement/Develop AI software.</li> <li>- Develop a Business Intelligence system.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Information Technology, Computer Science.</li> <li>- An experience in data engineering is often preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Proficiency of common programming languages such as C#, Java, Python, R, Ruby, Scala and SQL.</li> <li>- A good understanding of ETL (extract, transform, load) tools and APIs for creating and managing data integration jobs.</li> <li>- Knowledge of relational and non-relational databases (NoSQL databases, Apache Spark, MySQL and PostgreSQL) and Unix-based operating systems (OS) such as Unix, Solaris and Linux. Being familiar with tools and frameworks for machining learning, deep learning, big data. Knowledge of cloud computing and data security is a plus.</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills</li> <li>- Communication skills</li> <li>- Goal management skills</li> <li>- Problem solving skills</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>

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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study basic techniques in data engineering (fresher or internship level).</li> <li>- Code and implement software related to data and AI (junior level).</li> <li>- Build solutions and code difficult tasks in AI software or Data software (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated with a Bachelor's degree in Computer Science. If you are interested in data, you could study in software education centers and go to work.
<b>Academic qualification - II level</b>
<p>Tool: Microsoft power BI, Tableau, Excel, SQL/TSQL.</p> <p>Program language: Python, R, C++, Java, Django, Flask, ...</p> <p>Libraries: Tensorflow, Pytorch, Sklearn, Keras, Matplotlib, Spark, PySpark, Hadoop, Apache, ...</p> <p>Deep learning/Data Science: CNN, LSTM, RNN, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.5. Business Analyst

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Business Analyst (BA)

<b>Where it works</b>
Technical Departments, Software Development Departments, Sales Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Work closely with the customer to identify, clarify and analyse the customer requirement.</li> <li>- Build various requirement specifications (user requirement specification, functional specification, system requirement specification, etc.), use cases, user stories.</li> <li>- Work with the development team to provide the solution proposal to the customer.</li> <li>- Support in testing, verifying bugs/issues with the customer.</li> <li>- Write user guide and train staff in how to use the new application.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Information Technology, Information System. Degrees in business areas could be applicable.</li> <li>- For entry level, basic experience in developing or testing software is often required. For a more senior level, 3 or more years of experience are required.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Knowledge of software development process, especially software requirement analysis and modelling languages and tools.</li> <li>- Basic knowledge of programming, database and testing techniques.</li> <li>- General understanding business processes.</li> <li>- Depending on a position, a specific business domain knowledge is a plus (banking, insurance, health care, human resources, etc).</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>

<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Interview end users alone or with a leader (fresher or internship level).</li> <li>- Analyse requirements and write documents for developers (junior level).</li> <li>- Interview, write documents and consult solutions for users (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated with a Bachelor's degree in Information Management System. If you are interested in a BA position, you could study some related courses and start work for this position.
<b>Academic qualification - II level</b>
Soft skill is required for BA jobs: communication, negotiation, take note, visualisation, document.  Agile methodology is an advantage.  Knowledge about IT systems and business is well for BA.
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study hardly from vendor materials or real projects.

### 1.6. UI/UX Designer

<b>SECTION 1</b>
<b>Name of the professional figure</b>
UI/UX Designer
<b>Where it works</b>

Technical Departments, Software Development Departments, Marketing Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Investigate user requirements.</li> <li>- Develop a comprehensive UI/UX design strategy for the product.</li> <li>- Produce UX design solutions through wireframes, visual and graphic designs, flow diagrams, storyboards, site maps, and prototypes.</li> <li>- Design UI elements and tools such as navigation menus, search boxes, tabs, and widgets.</li> <li>- Develop UI mock-ups and prototypes.</li> <li>- Test UI elements and UX solutions.</li> <li>- Collaborate with the marketing and development teams to optimize the user experience.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas or in graphic design.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Knowledge of common wireframing, prototyping and designing tools (Sketch, Figma, InVision, Adobe Suite, Visio, etc.).</li> <li>- Knowledge of web technologies and platforms (HTML, CSS, iOS, Android).</li> <li>- Knowledge of aesthetic and usability principles.</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>
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<b>SECTION 2</b>

<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Design some easy tasks (fresher or internship level).</li> <li>- Make sketch, wireframe, mockup, prototype of future production (junior level).</li> <li>- Can do all tasks as a junior with more difficulty, and recommend software development (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
<p>Candidates graduated with a Bachelor's degree in Design or Art.</p> <p>Candidates should study extra courses in Design and using design tools, after that they practise a lot and join a real project.</p>
<b>Academic qualification - II level</b>
Design thinking, UI/UX methodology, Agile methodology, Adobe CS/AI/Photoshop courses
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.7. Deployment Staff

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Deployment staff/Implement staff
<b>Where it works</b>
Technical Departments, Software Development Departments
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Work with the customer to develop a deployment plan that meets their needs.</li> </ul>

<ul style="list-style-type: none"> <li>- Deploy new systems at the customer site, update existing systems, or decommission old systems as needed.</li> <li>- Test and troubleshoot installed systems.</li> <li>- Guide and train the customer on using the installed systems.</li> <li>- Provide technical support to the customer.</li> <li>- Help in creating user guides.</li> <li>- Create tools for automatic deployment.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Computer Science, Software Engineering, Information Technology.</li> <li>- For an entry/fresher level, no experience is required. For junior level, 1 or 2 years of experience are required. For a more senior level, more than 4,5 years of experience are required.</li> </ul>
<b>Technical skills</b>
Depending on the installed system, specific knowledge and skills of software technologies and platforms will be required. However, knowledge of networking, database, server technologies are generally required.
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>

The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Can install software or deploy a small system (fresher or internship level).</li> <li>- Deploy software from developer and support end user or training the usage of it (junior level).</li> <li>- Automation deploy code as DevOps, supply utilities for developers and support other members in the team (senior level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated Bachelor's degree in Information Technology. Some candidates graduated in other fields such as Telecommunication, Electronic want to change jobs, they study many extra courses in software.
<b>Academic qualification - II level</b>
<p>Language programming with basic level: Javascript, HTML, CSS, C#, Java, PHP, ...</p> <p>Knowledge in system: Cloud computing, software management tool, CI/CD tool, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

## 1.8. Software Architect

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Software architect
<b>Where it works</b>
Technical Departments, Software Development Departments, R&D Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Work with the product manager and other stakeholders to clarify and document platform requirements/specs (functional and non-functional).</li> </ul>



- Defining and creating platform architecture models using modern software architecture, design patterns and solutions for high performance, high scalability, high availability, security, integrability and maintainability.
- Work with the development team to implement platform core services/base framework.
- Provide and monitor platform architecture design documentation, coding standards, implementation guidelines as well as ensure high quality implementation/code quality for the development team.
- Ensures that all relevant project teams follow a common set of principles and patterns and utilize a standard set of technology frameworks and libraries.
- Participate in technical reviews and lead the team in solving technical issues, contribute and maintain software architecture design standards, base frameworks, coding standards, best practices, common libraries at company level.

**Qualifications**

- Bachelor’s degree or equivalent in Computer Science, Information Technology. Master degree is an advantage.
- Experience in software development and a minimum of 3 years of experience in system architecture design or technical team leader.
- Experience establishing legacy modernization and migration roadmaps for large-scale applications.

**Technical skills**

- Extensive hand-on experiences in defining software architecture models of large-scale software systems from scratch using UML, 4+1 Model, C4 Model
- Deep knowledge of common architectural patterns and service design (SOA, microservices, messaging, twelve-factor methodology, integration patterns...)
- Experience with programming languages: Php, Python, JavaScript, node.js, C#, Java..., coding in RDBMS, NoSQL (MySQL/MariaDB, PostgreSQL, SQL Server, Redis, MongoDB, Cassandra, ES.
- Knowledge of statistics, data mining, machine learning and operational excellence of production systems is a plus.

**Computer and linguistic knowledge**

Communication in English at basic level

**Personality and availability**

- Teamwork and cooperation skills.
- Communication skills.

<ul style="list-style-type: none"> <li>- Goal management skills.</li> <li>- Problem solving skills.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
Design architecture of software or system in high level or low level (senior or higher level).
<b>Academic qualification - I level</b>
Candidates graduated with a Bachelor or Master in Software Engineering.
<b>Academic qualification - II level</b>
<p>Good at some program language in full stack.</p> <p>Have many years in software development or product management.</p> <p>Have some certificates: TOGAF, ITIL, COBIT, CMMI, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

**1.9. Network Engineer/Systems Engineer/Network Administrator**

<b>SECTION 1</b>
<b>Name of the professional figure</b>

Network Engineer, System Engineer, Network administrator
<b>Where it works</b>
Technical Departments, IT Departments
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Install, configure, and maintain network equipment and devices.</li> <li>- Monitor network performance, analyse, and recommend required tunings to boost performance.</li> <li>- Perform system upgrades including service packs, patches, hot fixes and security configurations.</li> <li>- Troubleshoot network outages and connectivity issues.</li> <li>- Implement security tools, policies, and procedures.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Information Technology, Computer Engineering Technology, Computer Network and Data Communication.</li> <li>- An experience in IT support is often preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Knowledge of IP network/VLAN/VPN/Security products. Knowledge of network protocols (such as STP, HSRP, VRRP, EIGRP, OSPF, Policy Base Routing, IP SLA, EtherChannel, etc.).</li> <li>- Knowledge of server operating systems (Linux, Window). Knowledge of network devices (such as Cisco, Juniper, etc.).</li> <li>- Holding certification in network administration (such as CCNP, CCSA) is a plus.</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> </ul>

- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study technology and skill mini tasks (fresher or internship level).</li> <li>- Do easy tasks (junior level).</li> <li>- Build system architecture or solution, troubleshooting difficult issues (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated in IT with a Bachelor's degree.
<b>Academic qualification - II level</b>
<p>Help desk: computer troubleshooting, customer services, CompTA+</p> <p>Networking: CCNA or CCNP certificate. Have knowledge about other vendors' technology such as Paloalto, Fortigate, Draytek , ... Candidates can self-study with documents of the manufacturer.</p> <p>System: MCSA, MCTS, LPI, Office 365 suite, AWS, cloud computing, Sharepoint, Oracle EBS, Microsoft exchange, Microsoft Dynamic AX, ...</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.10. Cloud Computing Engineer

<b>SECTION 1</b>
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<b>Name of the professional figure</b>
Cloud Computing Engineer
<b>Where it works</b>
Technical Departments, IT Departments
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Develop and implement cloud infrastructure.</li> <li>- Configure cloud infrastructure components.</li> <li>- Migrate computer systems to the cloud.</li> <li>- Create applications and databases that perform on the cloud.</li> <li>- Monitor cloud management and data storage services.</li> <li>- Develop and maintain scripts to automate system tasks.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas such as Information Technology, Computer Engineering Technology, Computer Network and Data Communication.</li> <li>- An experience in IT support is often preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Knowledge of common cloud platforms (such as Amazon Web Services, Microsoft Azure, Google Cloud, and IBM Cloud).</li> <li>- Knowledge of data storage and security on cloud. Knowledge of networking protocols.</li> <li>- Knowledge of common programming languages used in cloud computing (such as Python, Java, Ruby).</li> <li>- Knowledge of network operating systems such as Windows and Linux.</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> </ul>

- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.
<b>Notes</b>
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<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study technology and skill mini tasks (fresher or internship level).</li> <li>- Do easy tasks (junior level).</li> <li>- Build system architecture or solution, troubleshooting difficult issues (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated in IT with a Bachelor's degree.
<b>Academic qualification - II level</b>
<p>Help desk: computer troubleshooting, customer services, CompTA+</p> <p>Networking: CCNA certificate.</p> <p>System and cloud: MCSA, MCTS, LPI, Office 365 suite, AWS, cloud computing, DevOps tool,..</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.11. AI Engineer

<b>SECTION 1</b>
<b>Name of the professional figure</b>

AI Engineer
<b>Where it works</b>
Technical Departments, Software Development Departments, AI center, AI Department, R&D Development
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Develop AI-based applications.</li> <li>- Research and develop AI models and algorithms.</li> <li>- Transform machine learning models into APIs that can be integrated with other applications.</li> <li>- Build end-to-end a Machine Learning application.</li> <li>- Automate AI infrastructures.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in computer and information technology areas, or in Applied Math and Data Science.</li> <li>- Experience in AI Engineering is often preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Proficiency of programming languages (Python, R, Java, and C++).</li> <li>- Knowledge of probability, statistics, and linear algebra.</li> <li>- Knowledge of big data technologies (Apache Spark, Hadoop, and MongoDB).</li> <li>- Knowledge of AI algorithms and frameworks (machine learning algorithms, deep learning algorithms, Theano, TensorFlow, Caffe, Keras, and PyTorch).</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills</li> <li>- Communication skill</li> <li>- Goal management skill</li> <li>- Problem solving skill</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details</li> </ul>

<b>Notes</b>
...
<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Research and develop an AI application or some tasks in the project (fresher, internship or junior level).</li> <li>- Research, write a pager or build solution for AI project/application (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated with a Bachelor's degree in Computer Science. If you are interested in AI, you could study and work in this field.
<b>Academic qualification - II level</b>
<p>Knowledge algorithm: CNN, RNN, LSTM, GA, Transformer, Reinforcement Learning, NLP, Big Data, ...</p> <p>Libraries and frameworks: Tensorflow, PyTorch, Numpy, Sklearn, R, Django, Flask, ...</p> <p>Read and write papers in AI.</p>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.12. Telecommunications Engineer

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Telecommunications Engineer



<b>Where it works</b>
Technical Departments, IT Departments, Networking Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Design, develop, test and install voice and data telecommunications networks.</li> <li>- Develop proposals and determine costs and timelines for telecommunications projects.</li> <li>- Test and implement new products and services.</li> <li>- Configure networks and interconnected systems.</li> <li>- Research, analyse and design system specifications.</li> <li>- Identify and solve issues with current network systems.</li> <li>- Monitor systems and identify needs for upgrades and enhancements.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in Electronic Engineering – Telecommunication.</li> <li>- An experience in IT support is often preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Knowledge of telecommunications systems such as mobile networks, CCTV, PABX, PA, ACS, IP and VoIP.</li> <li>- Knowledge of software for designing telecom networks and systems.</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills.</li> <li>- Communication skill.</li> <li>- Goal management skill.</li> <li>- Problem solving skill.</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.</li> </ul>
<b>Notes</b>
...
<b>SECTION 2</b>

<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Study technology and skill mini tasks (fresher or internship level).</li> <li>- Do easy tasks (junior level).</li> <li>- Build system architecture or solution, troubleshooting difficult issues (senior or higher level).</li> </ul>
<b>Academic qualification - I level</b>
Candidate graduated in IT with a Bachelor's degree.
<b>Academic qualification - II level</b>
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.13. IoT Engineer/ IoT Developer

<b>SECTION 1</b>
<b>Name of the professional figure</b>
IoT Engineer, IoT Developer
<b>Where it works</b>
Technical Departments, Software Development Departments, AI center, AI Department, R&D Development
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Analyse customer needs.</li> <li>- Develop software that allows IoT devices to function and connect to other devices.</li> <li>- Design, code and test features of IoT devices.</li> <li>- Design platform solutions that are cloud-compatible and work with IoT applications.</li> </ul>

- Research and develop IoT technologies.
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least Bachelor's degree in ICT areas such as Computer Science, Information Technology, Software Engineering, Telecommunications, Electronics Engineering.</li> <li>- Experience with programming front-end and back-end systems is preferred.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Proficiency of programming languages (Python, R, Java, and C++).</li> <li>- Knowledge of probability, statistics, and linear algebra.</li> <li>- Knowledge of big data technologies (Apache Spark, Hadoop, and MongoDB).</li> <li>- Knowledge of AI algorithms and frameworks (machine learning algorithms, deep learning algorithms, Theano, TensorFlow, Caffe, Keras, and PyTorch).</li> </ul>
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Teamwork and cooperation skills</li> <li>- Communication skill</li> <li>- Goal management skill</li> <li>- Problem solving skill</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details</li> </ul>
<b>Notes</b>
...
<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
<ul style="list-style-type: none"> <li>- Research and develop an IoT application or some tasks in the project (fresher, internship or junior level).</li> </ul>

- Research, write a pager or build a solution for an IoT project/application (senior or higher level).
<b>Academic qualification - I level</b>
Candidates graduated with a Bachelor's degree in Computer Science or Electronic Engineer. If you are interested in IoT, you could study and work in this field.
<b>Academic qualification - II level</b>
Knowledge algorithm: CNN, RNN, LSTM, GA, Transformer, Reinforcement Learning, NLP, Big Data, ...  Libraries and frameworks: Tensorflow, PyTorch, Numpy, Sklearn, R, Django, Flask, ...  Read and write papers in AI/IoT.
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.14. Solution Consultant

<b>SECTION 1</b>
<b>Name of the professional figure</b>
Solution Consultant
<b>Where it works</b>
Technical Departments, Software Development Departments, R&D Department, Sale Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Work with the customer to identify their IT needs.</li> <li>- Introduce and advise the customer on feasible IT solutions that are suitable to their needs.</li> <li>- Work with the technical team to propose IT solutions that are suitable to the customer needs.</li> <li>- Work with the sales team to prepare cost estimation and payment plans for the customer consideration.</li> <li>- Work with the sales and technical teams to prepare proposals for tendering.</li> </ul>

- Analyse the market to identify market trends.
<b>Qualifications</b>
- Bachelor's degree ICT or business areas. - Experience in presale, software development, marketing is preferred.
<b>Technical skills</b>
- A combination of knowledge in relevant IT solutions and business administration.
<b>Computer and linguistic knowledge</b>
Communication in English at basic level
<b>Personality and availability</b>
- Teamwork and cooperation skills. - Communication skills. - Goal management skills. - Problem solving skills. - Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details.
<b>Notes</b>
...
<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
Senior in software or system, have more experiences in business and solution (senior or higher level).
<b>Academic qualification - I level</b>
Candidate graduated Bachelor's in IT.
<b>Academic qualification - II level</b>

Have some certificates: TOGAF, ITIL, COBIT, CMMI, PMI,...
<b>Academic qualification - III level</b>
Candidates study many technical skills, and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.15. Team Leader/ Department Manager

SECTION 1
<b>Name of the professional figure</b>
Team Leader, Manager
<b>Where it works</b>
Technical Departments, Software Development Departments, R&D Department, Quality Assurance Department, Software Testing
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Carry out administrative functions.</li> <li>- Plan team activities.</li> <li>- Give direction and guidance to team members.</li> <li>- Coordinate the work of team members.</li> <li>- Coordinate with other teams and departments.</li> <li>- Coach and mentor team members.</li> <li>- Report to the senior management.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least a Bachelor's degree in ICT. A degree in business and management is an advantage.</li> <li>- Experience is required.</li> </ul>
<b>Technical skills</b>
Depending on the technical nature of their teams, a possession of comprehensive knowledge and technical skills in a certain technical field (software, testing, database, security, networking, cloud computing, IT solutions, etc.) is required.

<b>Computer and linguistic knowledge</b>
Good communication in English (or other foreign language such as Japanese, depending on the market of an enterprise)
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Decide skill</li> <li>- Critical thinking skill</li> <li>- Visualization skill</li> <li>- Teamwork and cooperation skills</li> <li>- Communication skill</li> <li>- Goal management and organisation skill</li> <li>- Problem solving skill</li> <li>- Negotiation skill</li> <li>- Leading and motivating skills</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details</li> </ul>
<b>Notes</b>
...
<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
Design work and manage tasks, good at some technical skills (team leader level).  Manage human resources, good knowledge in technology or business and management, design and manage works (manager level)
<b>Academic qualification - I level</b>
Candidates graduated Bachelor or Master.
<b>Academic qualification - II level</b>
Strong in soft skills.

Good at technical points or business management.
<b>Academic qualification - III level</b>
Candidates study many technical skills, management skills and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.

### 1.16. Project Leader/ Project Manager

SECTION 1
<b>Name of the professional figure</b>
Project Leader, Project Manager
<b>Where it works</b>
Technical Departments, IT Department, Software Development Departments, R&D Department
<b>The activities</b>
<ul style="list-style-type: none"> <li>- Work with the customer to identify their needs.</li> <li>- Work with the sales and technical teams to develop a proposal for customer consideration.</li> <li>- Set project goals and develop plans, budgeting estimates to meet those goals.</li> <li>- Maintain project timeframes and status reports.</li> <li>- Manage resources for projects (such as computer equipment and staff).</li> <li>- Coordinate project team members.</li> <li>- Coordinate with related teams and suppliers.</li> <li>- Liaise with the customer for project updating.</li> <li>- Conduct risk assessments for projects.</li> </ul>
<b>Qualifications</b>
<ul style="list-style-type: none"> <li>- At least a Bachelor's degree in ICT. A degree in business and management is an advantage.</li> <li>- Experience is required.</li> </ul>
<b>Technical skills</b>
<ul style="list-style-type: none"> <li>- Depending on the technical nature of the project, a possession of comprehensive knowledge and technical skills in a certain technical field (software, testing, database, security, networking, cloud computing, IT solutions, etc.) is required.</li> </ul>



- Project management skills are also required.
<b>Computer and linguistic knowledge</b>
Good communication in English (or other foreign language such as Japanese, depending on the market of an enterprise)
<b>Personality and availability</b>
<ul style="list-style-type: none"> <li>- Decide skill</li> <li>- Critical thinking skill</li> <li>- Visualization skill</li> <li>- Teamwork and cooperation skills</li> <li>- Communication skill</li> <li>- Goal management and organisation skill</li> <li>- Problem solving skill</li> <li>- Negotiation skill</li> <li>- Leading and motivating skills</li> <li>- Personalities: initiative, dependability, integrity, stress tolerance, persistence, and attentive to details</li> </ul>
<b>Notes</b>
...
<b>SECTION 2</b>
<b>Economic sector</b>
The economic sector in which the professional figure was detected: ICT
<b>Seniority level</b>
Strong at technical - business skill in project and work management (project leader level). Manage time, plan, resources and the processes in project (project manager level)
<b>Academic qualification - I level</b>
Candidates graduated Bachelor or Master.
<b>Academic qualification - II level</b>
Strong in soft skills.

Good at technical point or business management.

**Academic qualification - III level**

Candidates study many technical skills, management skills and just focus on a little to good at, according to their position. Almost they study from vendor materials or real projects.