

# OCCUPATIONAL QUALIFICATION STANDARD

## Senior Software Developer, EstQF Level 7

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Senior Software Developer, EstQF Level 7	7

### Part A DESCRIPTION OF WORK

A.1 Description of work
<p>Software Development Engineers identify the customer's needs and create a functional and value-adding software system in cooperation with the customer. They ensure the required quality of the software by using the best practices and standards, taking into account the optimal expenses and participating in the implementation of the developed solution.</p> <p>Software Development Engineers choose the appropriate tools and methods according to the nature of the task and understand the context of the solution being created. They assess the complexity of systems and keep the solution as simple as possible.</p> <p>Software Development Engineers assess an existing information/software system and see how it could be improved within the context of its life cycle.</p> <p>They participate in teamwork and take a suitable role in it (often as leader), including partners from every level.</p> <p>They understand information technology principles and business and management principles, are aware of information technology development trends and their impact on the organisation and take an active role in their implementation.</p> <p>They assess product creation options and demands of a solution or its parts and design the product, if necessary.</p> <p>Software developers work indoors, mainly seated, with risk factors including forced positions when working with a computer and strain on the eyes. Software developers cooperate with customers and colleagues of various national and cultural backgrounds. Team members may be geographically distant from one another.</p> <p>The European ICT Competence Framework (e-CF) is the basis for describing Information and Communications Technology (ICT) occupations.</p>
A.2 Tasks
<p>A.2.1 Designing a software solution in cooperation with the customer (e-CF competence A.5)</p> <p>A.2.2 Analysis and selection of the solution's architecture (e-CF competence A.5)</p> <p>A.2.3 Conducting the development process (e-CF competence B.1)</p> <p>A.2.4 Implementation of the software system (e-CF competence B.2)</p> <p>A.2.5 Testing (e-CF competence B.3)</p> <p>A.2.6 Solution implementation/installation/adoption (e-CF competence B.4)</p> <p>A.2.7 Software system support (e-CF competence C.1)</p>
A.3 Professional preparation
<p>Software Development Engineers are usually people with specialised higher education. Vocational skills may be acquired through further training or training at the workplace.</p>
A.4 Most common occupational titles
<p>Senior software developer, senior programmer, leading tester, leading software developer, software architect, software analyst, development manager.</p>

### A.5 Regulations governing profession

There are no regulations governing the occupation.

## Part B COMPETENCY REQUIREMENTS

### B.1 Structure of occupation

The occupation consists of general skills (B.2) and mandatory competences (B.3.1-B.3.7).

### B.2 General skills of Senior Software Developer, EstQF Level 7

- 1) in their work they rely on their knowledge of programming languages and development tools, design patterns, algorithms and data structures, databases and their uses, user interface development technologies and patterns and the legal framework of software; if necessary, they implement new development methods and technologies;
- 2) they have thorough knowledge of business operation principles and the functioning of the organisation;
- 3) they consciously select and adapt their communication style according to the situation;
- 4) they treat the customer's needs rationally and set realistic expectations in order to support a deepening of mutual trust;
- 5) they take into account the interests of the organisation when setting personal professional goals and use the organisation's resources responsibly and prudently;
- 6) they take responsibility for their own actions and those of their team or field within the limits of their competence;
- 7) they process the information entrusted to them in accordance with the existing procedure and legislation;
- 8) they consider ethical beliefs and values important and draw attention to unethical practices;
- 9) they lead the team's work and recognise the contributions of others;
- 10) they compare personal competence with the level of difficulty of a task and choose the appropriate behaviour, involving specialists in the field, if necessary;
- 11) they encourage and fully support the concept of a learning organisation in their activities;
- 12) they develop themselves and keep themselves informed of developments in the field;
- 13) they speak Estonian at the B1 level and English at the B2 level (see Annex 1).

### B.3 Competences

#### B.3.1 Designing a software solution in cooperation with the customer (e-CF competence A.5)

**EstQF Level 7**

Performance indicators:

1. cooperates with the customer to develop, implement and deploy a complete software solution;
2. assesses the customer's actual needs and provides functional feedback;
3. compiles the initial task, plans its execution and assesses and selects the technologies based on needs;
4. models a complete solution;
5. includes various parties and requests and provides constant feedback.

#### B.3.2 Analysis and selection of the solution's architecture (e-CF competence A.5)

**EstQF Level 7**

Performance indicators:

1. plans the system architecture using suitable technologies and ensuring sustainability;
2. designs system integration and ensures the interoperability and sustainability of systems, taking into account existing systems architecture;
3. identifies the need for performance and takes into account performance requirements and their changes;
4. complies with data security principles and security requirements;
5. considers the cost efficiency of the solution;
6. considers the effect of product creation.

#### B.3.3 Conducting the development process (e-CF competence B.1)

**EstQF Level 7**

Performance indicators:

1. organises work in order to develop a functioning solution, following the principles of software development;

<p>2. includes and manages the team, selects the appropriate role in the team for each situation and includes various parties to the development process;</p> <p>3. selects and applies the development methodology;</p> <p>4. acts based on the customer's priorities and supports the customer in setting priorities.</p>	
<b>B.3.4 Implementation of the software system (e-CF competence B.2)</b>	<b>EstQF Level 7</b>
<p>Performance indicators:</p> <p>1. creates a functioning software system following best practice and introducing new practices, if necessary;</p> <p>2. writes sustainable source code and unit tests;</p> <p>3. produces interfaces that consume and provide data and the surrounding frame of reference;</p> <p>4. uses and improves existing source code;</p> <p>5. is guided by user-centred design/usability principles.</p>	
<b>B.3.5 Testing (e-CF competence B.3)</b>	<b>EstQF Level 7</b>
<p>Performance indicators:</p> <p>1. validates the expected operation of the system, including compliance with security and availability requirements;</p> <p>2. selects appropriate testing methods;</p> <p>3. defines, designs and conducts test cases;</p> <p>4. takes into account the critical nature of specific functionalities;</p> <p>5. automates the testing process;</p> <p>6. plans and manages the testing process.</p>	
<b>B.3.6 Solution implementation/installation/adoption (e-CF competence B.4)</b>	<b>EstQF Level 7</b>
<p>Performance indicators:</p> <p>1. plans the implementation process of the software system;</p> <p>2. participates in or manages the implementation of the software system;</p> <p>3. bundles the solution;</p> <p>4. creates the necessary infrastructure and process for installation, following best practice;</p> <p>5. installs the system in various environments, following best practice, and describes the installation process;</p> <p>6. delivers the system to the service provider;</p> <p>7. delivers the system to the service user.</p>	
<b>B.3.7 Software system support (e-CF competence C.1)</b>	<b>EstQF Level 7</b>
<p>Performance indicators:</p> <p>1. selects and deploys the monitoring systems of the software system;</p> <p>2. monitors the software system using the monitoring systems and analysis tools and responds to changing performance needs;</p> <p>3. detects, analyses and resolves error situations;</p> <p>4. instructs the user and identifies business logic or usability issues.</p>	

## Part C GENERAL INFORMATION AND ANNEXES

<b>C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations</b>	
1. ID of occupational qualification standard in register of occupational qualifications	08-17102019-1.4/2k
2. Occupational qualification standard compiled by:	<p>Taavi Sepp, Telia Eesti AS</p> <p>Markus Karileet, Helmes AS</p> <p>Heiki Tähis, Atea AS</p> <p>Erik Jõgi, Codeborne OÜ</p> <p>Ago Kuusik, Playtech Estonia OÜ</p> <p>Anti Ainsar, ADM Interactive OÜ</p> <p>Gunnar Piho, TalTech</p> <p>Marina Lepp, Tartu Ülikool</p>

3. Occupational qualification standard approved by:	Information Technology and Telecommunication
4. No. of decision of Sectoral Council	15
5. Date of decision of Sectoral Council	17.10.2019
6. Occupational qualification standard valid until	27.03.2024
7. Occupational qualification standard version no.	2
8. Reference to International Standard Classification of Occupations (ISCO 08)	2512 Software Developers
9. Reference to European Qualifications Framework (EQF)	7
<b>C.2 Occupational title in foreign language</b>	
English:	Senior Software Developer, EstQF Level 7
English:	Software Development Engineer, Level 7
<b>C.3 Annexes</b>	
Lisa 1 <a href="#">Language skills level descriptions</a>	