Skills Transferability Matrix

Software Engineers and Designers

As equipment and machinery are increasingly capable of performing tasks without human intervention, programming and connectivity are valuable enablers of technology. Strong analytical skills and reasoning capabilities, coupled with foundational understanding of engineering principals and programming and networking make Software Engineers and Designers flexible professionals. Their diverse skill set gives them transferability to numerous roles within information technology and engineering, with the prospect of transitioning to managerial roles.

Skills

Skills are developed through training and experience, and are the practical proficiencies someone possesses. The following are top key skills software engineers and designers employ in their work:

1. Critical Thinking
2. Complex Problem Solving
3. Judgement and Decision Making
4. System Analysis
5. Reading Comprehension

Technical Knowledge

Technical Knowledge is the understanding of theory and utility of modern tools in a work environment. The following tools are used by software engineers and designers employ regularly:

1. Requirements analysis and system architecture software
2. Development environment software
3. Data base management system software
4. Compiler and decompiler software
5. Object oriented data base management software

Tasks

Tasks are the assigned duties that an occupational group performs in their daily work. The following are the tasks software engineers and designers employ most regularly encounter:

1. Analyze data to identify or resolve operational problems.
2. Apply information technology to solve business or other applied problems.
3. Monitor the performance of computer networks.
4. Assign duties or work schedules to employees.
5. Design integrated computer systems.

Abilities

Abilities refer to the innate faculties that allow workers to carry out tasks and activities. The following are the top abilities that software engineers and designers employ possess:

1. Deductive and Inductive Reasoning
2. Information Ordering
3. Fluency of Ideas
4. Oral Comprehension & Expression
5. Near Vision

Skills Transferability Matrix

FOCAL's Skills Transferability Matrices analyze the transferability of an occupation across a multitude of other occupations on the basis of similarities in **skills**, **technical knowledge, tasks,** and **abilities** as outlined by the O*Net database. It aims to show workers how to leverage their skill set in changing occupations, planning a career path, and transitioning to other industries. It also assists policy makers and educators address changing skill sets and areas of opportunity for workforce entrants in developing industries. Employers can also use this tool in reskilling or upskilling workers to circumvent skills shortages, and reduce the hiring and training challenges.

Software Engineers and Designers					
Occupations	Skills	Technology	Tasks	Abilities	Total
Information systems analysts and consultants	82%	97%	42%	89%	78%
Computer engineers (except software engineers and designers)	86%	85%	29%	92%	73%
Information systems testing technicians	78%	91%	29%	87%	71%
Database analysts and data administrators	86%	91%	14%	87%	70%
Computer network technicians	77%	91%	25%	84%	69%
Computer and information systems managers	80%	76%	5%	91%	63%
Electrical and electronics engineers	84%	56%	0%	91%	58%
Chemical engineers	85%	53%	0%	89%	57%
Civil engineers	83%	50%	0%	87%	55%
Mechanical engineers	83%	47%	0%	88%	54%
Petroleum engineers	81%	35%	0%	89%	51%
Industrial engineering and manufacturing technologists and technicians	81%	44%	0%	80%	51%
Metallurgical and materials engineers	81%	29%	0%	90%	50%
Other professional occupations in physical sciences	81%	29%	0%	90%	50%
Production logistics co-ordinators	70%	26%	0%	79%	44%

After scanning over 2,600 skills, technical competencies, tasks, and abilities of each of the 500 occupations as defined by the National Occupational Classification (NOC) system, a skills transferability matrix for software engineers and designers is produced. In the matrix above, a high score is highlighted in green and indicates the high transferability potential of an attribute of an occupation with that of software engineers and designers. Lower or no transferability areas are marked in red. Software engineering and design requires deep knowledge of computer programming, hardware and networking. This gives software engineers and designers strong transferability to roles within the information technology sector. Transferability to several roles in engineering is observed, with closest transferability to computer engineering. Engineering roles, including computer engineering, may come with extensive education and training requirements. Software engineers and designers have relatively high transferability to computer and information systems managers, indicating that with some training they may be good managerial candidates.

To learn more about developments, trends and new technologies in Canada's automotive manufacturing industry, visit our website futureautolabourforce.ca.

You can also check our social media by following these links:

/focalinitiative

@FocalInitiative

/focal-initiative