CAREER PATHS

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SOFTWARE ENGINEERING

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SOFTWARE ENGINEERING

Book 1

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Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	The Software Engineer	Course Description	artifact, design, develop, evaluate, install, investigate, programming- in the-large, programming-in-the small, software, test, write	Expressing enthusiasm
2	Types of Eomputers	Journal Article	computer, computing cluster, desktop,embedded computer, laptop, notebook, PC, server, tablet, workstation	Making plans
3	Accessories and Peripherals	Email	flash drive, flat panel, inkjet printer, keyboard, laser printer, monitor, optical mouse, peripheral, scroll wheel, scanner, wireless	Apologizing for an error
4	Inside the Computer	Brochure	case, CD/ DVD drive, cover, fan, hard drive, heat sink, motherboard, port, power supply, processor	Offering advice
5	System Software 1	Textbook chapter	BIOS, control, device driver, firmware,hardware, manually, operate, operating system, system software, window system	Giving a reminder
6	System Software 2	Webpage	antivirus software, deny, firewall, malware, permit, quarantine, removal, security software, spyware	Describing consequences
7	Programming Software	Textbook Chapter	compiler, debugger, IDE, interpreter, linker, program, programming language, programming software, source code editor, text editor	Expressing confusion
8	Application Software 1	Advertisement	accounting, application software, desktop publishing, enterprise, image editing, office suite, spreadsheet, video editing, web browsing, word processing	Politely disagreeing
9	Application Software 2	Journal Article	bioinformatics, cost analysis, data management, digital assistant, mobile app, multimedia player, payroll, route planning, satellite navigation, simulation	Asking for more information
10	The Desktop and GUI	Manual	cursor, desktop, dropdown menu, folder, GUI, icon, open, right-click, run, select	Giving instructions
11	Basic Numbers and Math	Chart	add, equal, divide by, hundred, less, minus, multiply by, over, subtract, times	Making a realization
12	Analyzing Numbers and Quantities	Textbook Chapter	convert, decimal number, denominator, fraction, numerator, out of, percent, percentage, point, reduce	Describing progress
13	Describing Change	Magazine Article	decline, decrease, double, expand, fluctuate, increase, rise, stablilize, steady, trend	Expressing confidence
14	Presentations and Communication	Email	body language, eye contact, handout, note card, presentation, project, review, signpost, summary, visual aid	Giving constructive criticism
15	Education	Webpage	Bachelor's degree, calculus, circuit analysis, computer architecture, computer engineering, control system, electronics, foundation, linear algebra, programming	Describing order of events

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1 The Software Engineer

Hullward University:
Software Engineering Department

Software Engineering 101: Course Outcomes

This class focuses on computer **software**. It covers various elements of development and programming. The students will learn to **design** and **develop** programs. The objective is to **write** useful computer software.

Small groups of students will complete several short projects. These focus on **programming-in-the-small**. The whole class will work together on **programming-in-the-large**. This project runs throughout the entire semester.

The students will also **install** and **test** their own software **artifacts**. This is an opportunity to **investigate** any software development problems. Finally, students will **evaluate** the correctness of each other's software. Student reviews are part of the final grade.

Get ready!

1 Before you read the passage, talk about these questions.

1 What are some steps in the process of creating software?

2 What are some responsibilities of a software engineer?

Reading

2 Read the course description. Then, choose the correct answers.

1 What is NOT included in the course?

A how to write software
B steps for investigating problems
C the history of software development
D testing other students' software

2 What will the students do for each other?

A adjust development plans
B recommend career paths
C install software
D evaluate performance

3 What is true of the programming-in-the-small project?

A It is the first step in writing a program.
B It involves small groups of students.
C It deals with the main framework of a program.
D It is used to install programs.

Vocabulary

3 **Match the words (1-8) with the definitions (A-H).**

1 __ evaluate
2 __ software
3 __ investigate
4 __ write
5 __ design
6 __ develop
7 __ install
8 __ test

A to form letters and words into sentences or instructions
B to plan the way that something will be created
C to bring something from initial conception to action or implementation
D to carefully study something and assess its qualities
E to operate something to see whether it works
F to put something into the place where it will function
G to get more information about something
H the programs that perform particular functions on a computer

4 **Choose the sentence that uses the underlined part correctly.**

1 A Programming-in-the-small often creates less complex software.
B Students must develop problems in order to repair the program.

2 A The teacher will install the software's performance.
B Students are working on programming-in-the-large to create a program with many levels and functions.

5 **Listen and read the course description again. What is the difference between programming-in-the-large and programming-in-the-small?**

Listening

6 **Listen to a conversation between a student and an instructor. Mark the following statements as true (T) or false (F).**

1 __ The woman recommends programming-in-the-large.
2 __ The man enjoys investigating problems.
3 __ The man is nervous about working in groups.

7 **Listen again and complete the conversation.**

Student: Professor Wendell? I'm really interested in **1** _____ _____. But is it a good career choice?
Instructor: I think so. You are a good leader. You'd enjoy **2** _____-_____-_____-_____.
Student: I agree. I like working in groups.
Instructor: You like to **3** _____ _____, right?
Student: Yes, I do. But software engineering seems like it could **4** _____ _____.
Instructor: It's sometimes challenging when others **5** _____ your work. But it if you are patient, it is very rewarding.
Student: That **6** _____ _____ something I can do.

Speaking

8 **With a partner, act out the roles below based on Task 7. Then, switch roles.**

USE LANGUAGE SUCH AS:

I'm interested in ... / You're a good ...
It can be ...

Student A: You are a student. Talk to Student B about:

- a career in software engineering
- how it is rewarding
- how it is challenging

Student B: You are an instructor. Talk to Student A about a career in software engineering.

Writing

9 **Use the conversation from Task 8 to complete a career advice webpages.**

Is Software Engineering Right for You?

Rewards

- Engineers can _____.
- The job comes with opportunities to _____

Challenges

- It can be hard to _____.
- Engineers must _____.

2 Types of Computers

Get ready!

1 Before you read the passage, talk about these questions.

1 What kinds of computers are typical for personal use?

2 What kinds of computers are typical for business use?

Reading

2 Read the journal article. Then, choose the correct answers.

1 What is the main idea of the article?

A recommendations for computer purchases

B the challenges of today's software engineering industry

C the equipment that a computer company manufactures

D technology arising from advances in software development

2 According to the article, which of the following is NOT something that software engineers do?

A create programs for individual use on PCs

B develop complex software to run on government computing clusters

C connect many computers to large corporate servers

D increase the size of desktops for homes and businesses

3 What opinion does the article express about software engineering?

A It is expanding more quickly each year.

B It is responsible for improving many areas of people's lives.

C It is a good area in which to start a successful career.

D It is a subject that everyone should be educated about.

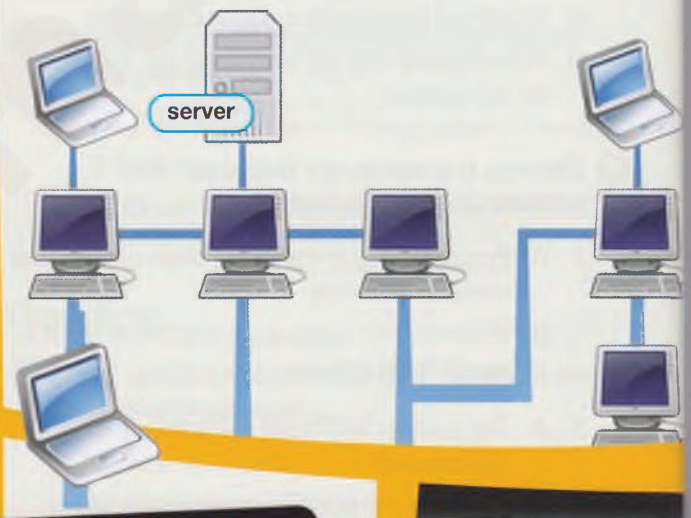
The Weekly Techie

LET'S FACE IT: WE RELY ON SOFTWARE ENGINEERS

They create programs for our home **PCs**. They also develop advanced software for government **computing clusters**. They help us connect multiple **workstations** to massive corporate **servers**.

Home **computers** were a luxury just a short time ago. People felt lucky to have bulky **desktops** in homes and businesses. Now these computers are smaller and more powerful. Many people use **laptops** or **notebooks** instead. **Tablets** provide added mobility. And now people can install **embedded computers** just about anywhere.

This is all possible because of software engineers. The software development industry strives to make life easier. So from all of us at The Weekly Techie: thanks, software engineers!



Vocabulary

3 Match the words (1-5) with the definitions (A-E).

1 __ PC
2 __ tablet
3 __ laptop
4 __ desktop
5 __ workstation

A a very small computer that typically does not have a keyboard
B a hinged computer that is easy to transport
C a computer that is intended for personal use
D a powerful computer that processes advanced tasks
E a computer that is intended for use in one location

4 Read the sentences and choose the correct words.

1 The student carried a **desktop / notebook** to class every day.
2 The company connected all of its computers to the same **PC / server.**
3 Early **computers / laptops** were so large that they occupied entire rooms.
4 A **tablet / computing cluster** is more powerful than most other types of computers.
5 The company installed **embedded computers / workstations** in employees' cars.

5 Listen and read the journal article again. What is a benefit of using a tablet?

Listening

6 Listen to a conversation between two engineers. Mark the following statements as true (T) or false (F).

1 __ The woman finished developing a program for desktops.
2 __ The man recommends creating another application for laptops.
3 __ The woman plans to make the program work with a touch screen.

7 Listen again and complete the conversation.

Engineer 1: Hey, Grace. What are you **1** _____ _____ ?
Engineer 2: I'm still developing the home banking application.
Engineer 1: Wait, didn't you **2** _____ _____ already?
Engineer 2: Well, sort of. I finished a version for **3** _____ _____ _____ .
Engineer 1: So what are you doing now?
Engineer 2: Next, I'm going to create an application for **4** _____ .
Engineer 1: Oh, that's a good idea. **5** _____ _____ _____ carry tablets nowadays.
Engineer 2: Right. That's why **6** _____ _____ needs to work well with a touch screen.

Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Didn't you finish ...
What are you doing ...
Next, I'm going to ...

Student A: You are an engineer. Talk to Student B about:

- a program that he or she is developing
- the types of computers that the program currently works on
- the types of computers that the program will work on

Student B: You are an engineer. Talk to Student A about a program that you are developing.

Writing

9 Use the conversation from Task 8 to complete the project extension request.

Brown & Steele Software Development:

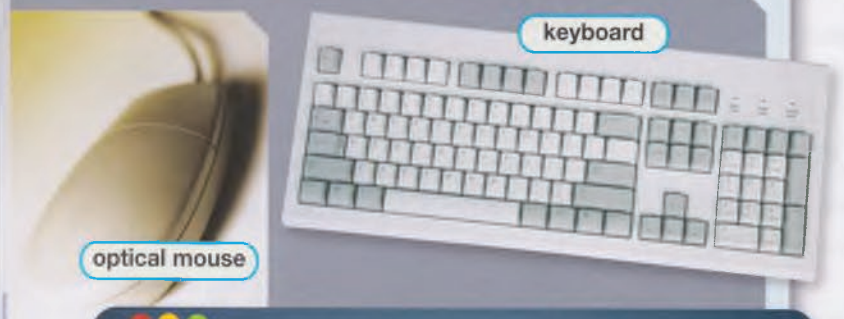
Project Extension Request Form

Project:

Current Progress: So far, I developed the program for use on _____ .

Reason for Extension: I would like to develop the program for use on _____ because _____ .
An important feature of the new version will be _____ _____ .

3 Accessories and Peripherals



Get ready!

1 Before you read the passage, talk about these questions.

1 What computer accessories are used to input information?

2 What computer accessories are used to display information?

Reading

2 Read the email. Then, mark the following statements as true (T) or false (F).

1 __ The order includes monitors in two different sizes.

2 __ Some of the optical mice are not wireless.

3 __ The customer requested an extra package of flash drives.

To: l.carmichael@rjdtechcorp.com
From: p.rossini@worldwidecompsupply.com
Subject: Re: Your Order (#25841)

Dear Ms. Carmichael,

Thank you for choosing **peripherals** from Worldwide Comp Supply. Please ensure the following information is correct:

Category	Quantity	Description
Monitors	24	XR60 **flat panel** screen (17-inch)
	12	XR90 flat panel screen (24-inch)
Attachments	36	S740 QWERTY **keyboard**
	30	SL90 **optical mouse** with **scroll wheel**
	6	SL90W **wireless** optical mouse with scroll wheel
Printers	4	P1070 black-and-white **laser printer**
	4	PI66 photo-quality **inkjet printer** with a built-in **scanner**

Congratulations! This order qualifies for eight FREE storage devices. A package of ShurStore 4GB **flash drives** is included in your shipment. Thank you for your business!

Sincerely,
Paul Rossini
Worldwide Comp Supply

Vocabulary

3 Fill in the blanks with the correct words and phrases from the word bank.

WORD BANK

wireless flat panel laser printer
peripherals keyboard scroll wheel

1 The mouse is _____, so the user doesn't have to plug it in.

2 If the _____ breaks, it's difficult to move up and down on the screen.

3 Today's _____ monitors are much more popular than the old, rounded ones.

4 The student types fifty words per minute on his _____.

5 The new _____ produces clear, precise text on each page.

6 A monitor and a mouse are types of _____.