

How Software Gets Built and Used

Textbook

How Software Gets Built and Used



What Is the Software Development Life Cycle (SDLC)?

Have you ever used a phone app or a computer program and thought, "Wow, this works great!" That's no accident—it's the result of careful planning, designing, testing, and improving. This process is called the **Software Development Life Cycle (SDLC)**.

The SDLC is a step-by-step method used by software developers to build programs that are useful, safe, and easy to use. Each phase is important for making sure the software works well for the people who use it.

Phases of the SDLC

Here are the main **phases** of the software development life cycle:

Phase	What Happens
1. Planning	Developers figure out what the software needs to do and who will use it.
2. Design	The team plans how the software will look and function.

3. Development	Programmers write the code to build the software.
4. Testing	The team checks for bugs (errors) and makes sure everything works properly.
5. Deployment	The software is released so users can start using it.
6. Maintenance	Developers fix bugs, add updates, and improve the software over time.

The final phase—**maintenance**—is especially important. Even after release, software needs updates to meet new needs, stay secure, or fix problems.

What Makes Software "Good"?

A finished piece of software is called a **software artifact**. To be useful, a software artifact should have:

- **Usability:** It's easy for people to learn and use.
- **Completeness:** It includes all the necessary features it was designed for.
- **Accuracy:** It gives the correct output and performs its functions reliably.

When developers evaluate software, they look at these characteristics to see how effective the program is.

Desktop Apps vs. Online Subscriptions

There are two main types of applications you might use:

- **Desktop Applications** are programs you download and install on a computer. Examples: Microsoft Word, Adobe Photoshop.
- **Software as a Service (SaaS)** is software that runs online, usually through a web browser. Examples: Google Docs, Canva, Microsoft 365 Online.

Type	Benefits	Limitations
Desktop Apps	Work offline; sometimes faster performance	Must install updates manually; tied to device
SaaS (Online)	Accessible from anywhere; updates automatically	Needs internet access to work properly

Many tools today offer **both versions**—like Photoshop (desktop) and Photoshop Express (online). The online version often has fewer features, but it's easier to access.

Critical Thinking Questions

1. Why is the maintenance phase important, even after a piece of software has already been released?
2. Think of your favorite app. What makes it usable, complete, and accurate?
3. Which do you prefer: using a desktop app or a web-based tool? Why?

Questions (5)

1. What is the first phase in the software development life cycle (SDLC)?

MULTIPLE CHOICE

Choose the correct answer:

- A. Testing
- B. Design
- C. Planning
- D. Maintenance

2. Why is the maintenance phase important in software development?

MULTIPLE CHOICE

Choose the correct answer:

- A. It's when the app is deleted
- B. It adds bugs to make the program more realistic
- C. It allows developers to fix issues and make improvements
- D. It ends the development process forever

3. Which of the following is an essential characteristic of a software artifact?

MULTIPLE CHOICE

Choose the correct answer:

- A. Entertainment value
- B. Usability
- C. Popularity
- D. Screen size

4. What is one limitation of using Software as a Service (SaaS)?

MULTIPLE CHOICE

Choose the correct answer:

- A. You can only use it at school
- B. It doesn't need the internet to run
- C. It requires installation on a computer
- D. It may not work without an internet connection

5. What is the difference between a desktop app and a SaaS program?

Choose the correct answer:

- A. SaaS runs only on phones
- B. Desktop apps are always free
- C. SaaS runs only on desktops
- D. They are exactly the same

Answer Keys & Solutions

Questions

1. What is the first phase in the software development life cycle (SDLC)?

MULTIPLE CHOICE

Correct Answer:

- | | |
|----------------|-------------|
| A. Testing | ✗ Incorrect |
| B. Design | ✗ Incorrect |
| C. Planning | ✓ Correct |
| D. Maintenance | ✗ Incorrect |

2. Why is the maintenance phase important in software development?

MULTIPLE CHOICE

Correct Answer:

- | | |
|---|-------------|
| A. It's when the app is deleted | ✗ Incorrect |
| B. It adds bugs to make the program more realistic | ✗ Incorrect |
| C. It allows developers to fix issues and make improvements | ✓ Correct |
| D. It ends the development process forever | ✗ Incorrect |

3. Which of the following is an essential characteristic of a software artifact?

MULTIPLE CHOICE

Correct Answer:

- | | |
|------------------------|-------------|
| A. Entertainment value | ✗ Incorrect |
| B. Usability | ✓ Correct |
| C. Popularity | ✗ Incorrect |

D. Screen size

✗ Incorrect

4. What is one limitation of using Software as a Service (SaaS)?

MULTIPLE CHOICE

Correct Answer:

A. You can only use it at school

✗ Incorrect

B. It doesn't need the internet to run

✗ Incorrect

C. It requires installation on a computer

✗ Incorrect

D. It may not work without an internet connection

✓ Correct

5. What is the difference between a desktop app and a SaaS program?

MULTIPLE CHOICE

Correct Answer:

A. SaaS runs only on phones

✓ Correct

B. Desktop apps are always free

✗ Incorrect

C. SaaS runs only on desktops

✗ Incorrect

D. They are exactly the same

✗ Incorrect