Introduction to JavaScript

Basic Syntax, Conditions and Loops

SoftUni Team

Technical Trainers

Software University

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Have a Question?

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#fund-js

Introduction and IDE

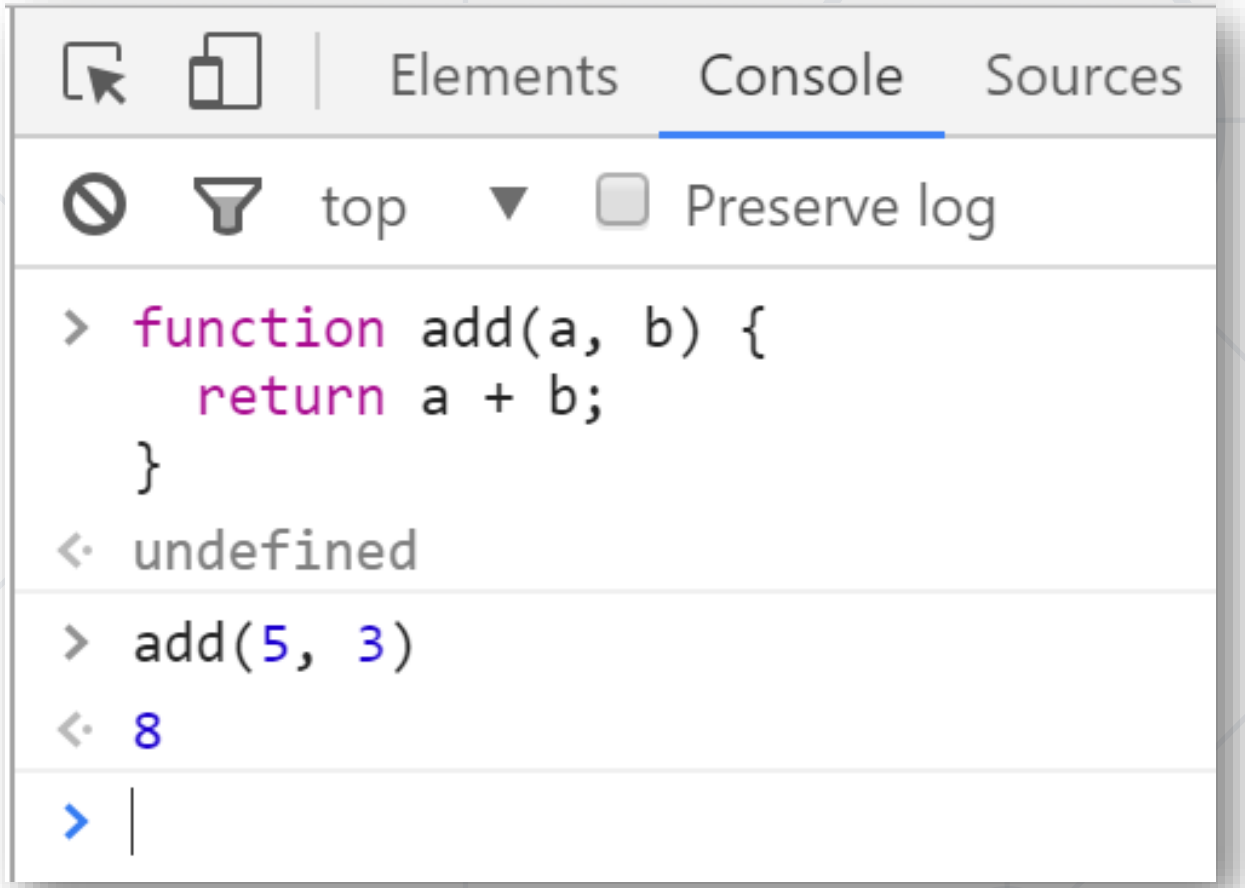
Development Environments for JS

What is JavaScript?

- JavaScript (**JS**) is a **high-level** programming language
  - One of the **core technologies** of the World Wide Web
  - Enables **interactive** web pages and applications
  - Can be **executed** on the **server** and on the **client**
- Features:
  - C-like **syntax** (curly-brackets, identifiers, operator)
  - **Multi-paradigm** (imperative, functional, OOP)
  - Dynamic **typing**

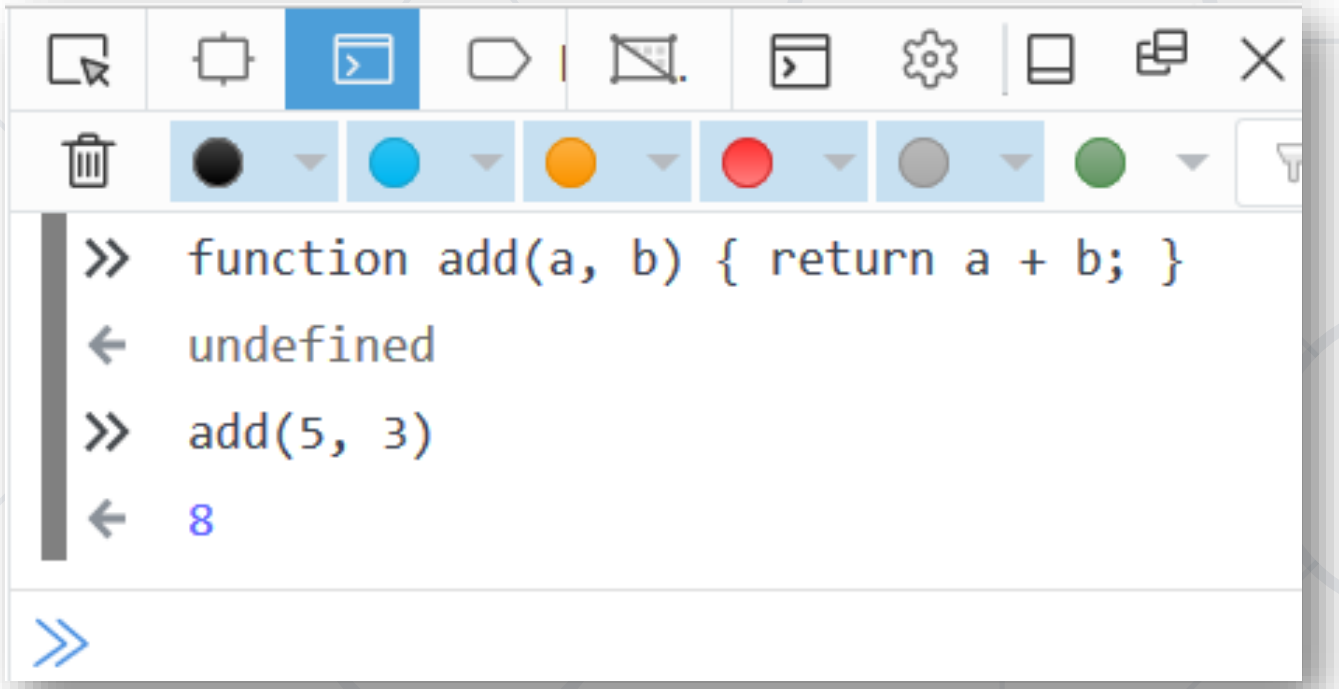
Chrome Web Browser

Developer Console: **[F12]**



Firefox Web Browser

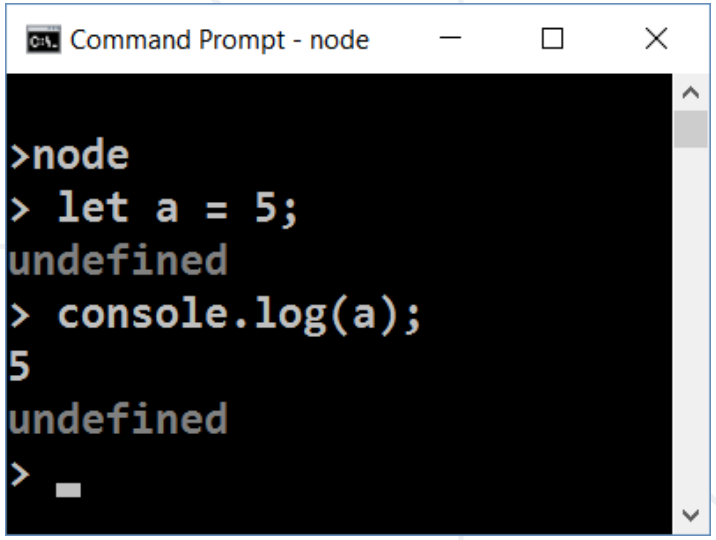
Developer Console: **[Ctrl] + [Shift] + [i]**



Node.js

What is **Node.js**?

- Server-side JavaScript runtime
- Chrome V8 JavaScript engine
- NPM (Node Package Manager)
- Install node packages



Install the Latest Node.js

Downloads

Latest LTS Version: **14.17.0** (includes npm 6.14.13)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

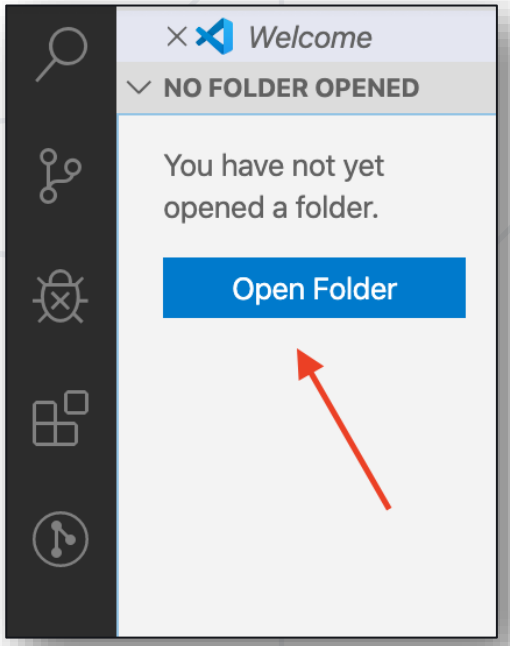
LTS Recommended For Most Users	Current Latest Features

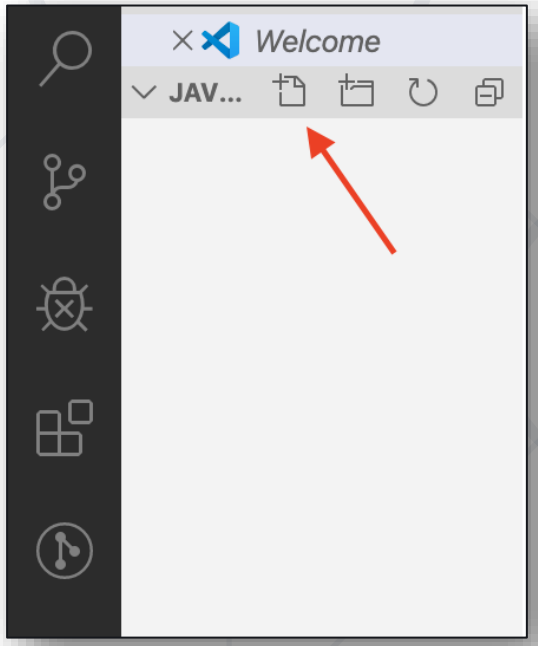
Windows Installer	macOS Installer	Source Code
node-v14.17.0-x86.msi	node-v14.17.0.pkg	node-v14.17.0.tar.gz

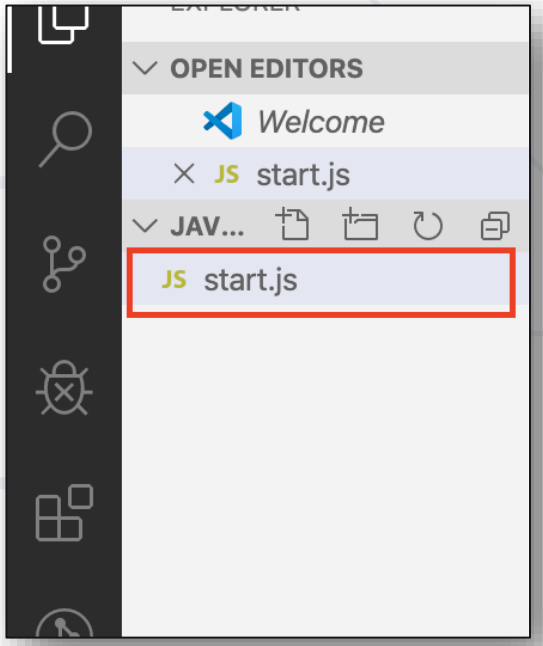
Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.zip)	32-bit	64-bit
macOS Installer (.pkg)	64-bit	
macOS Binary (.tar.gz)	64-bit	
Linux Binaries (x64)	64-bit	
Linux Binaries (ARM)	ARMv7	ARMv8
Source Code	node-v14.17.0.tar.gz	

Using Visual Studio Code

- **Visual Studio Code** is powerful text editor for JavaScript and other projects
- In order to create your **first project**:







JavaScript Syntax

Function and Comparison Operators

JavaScript Syntax

- The JavaScript syntax is similar to other programming languages
  - Operators, Variables, Conditional statements, loops, functions, arrays, objects and classes

Declare a variable with let

Conditional statement

```
let a = 5;
let b = 10;
if (b > a) {
  console.log(b);
}
```

Body of the conditional statement

Functions

- In order to solve different problems, we are going to use **functions** and the input will come as parameters
- A function is similar to a **procedure**, that executes when called

declaration

parameters

```
function solve (num1, num2) {
    //some logic
}

solve(2, 3);
```

calling the function

Problem: Multiply Number by Two

- Write a function that receives a **number** and prints as result that number **multiplied by two**

Input	Output
2	4

```
function solve (num) {
  console.log(num * 2);
}
solve(2);
```

Comparison Operators

Operator	Notation in JS
Equal value	==
Equal value and type	===
Not equal value	!=
Not equal value/type	!==
Greater than	>
Greater than or Equal	>=
Less than	<
Less than or Equal	<=

If (a > b)

Conditional Statements

Implementing Control-Flow Logic

What is Conditional Statement

The **if-else** statement:

- Do action depending on condition

```
let a = 5;
if (a >= 5) {
  console.log(a);
}
```

If the condition **is met**, the code will execute

- You can chain conditions

```
else {
 console.log('no');
}
```

Continue on the **next condition**, if the first is **not met**

Problem: Excellent Grade

- Write a function that receives a **single number** and checks if the grade is excellent or not
- If it is, print "**Excellent**", otherwise print "**Not excellent**"

Input	Output
5.50	Excellent
4.35	Not excellent

```
function solve(grade){
  if (grade >= 5.50) {
    //TODO
  } else {
    //TODO
  }
}
```

for
while

Loops

Code Block Repetition

What Are Loops

The **for** loop:

- Repeats until the condition is evaluated

```
for (let i = 1; i <= 5; i++){
  console.log(i)
}
```

Incrementation in the condition

The **while** loop:

- Does the same, but has different structure

```
let i = 1
while (i <= 5) {
  console.log(i)
  i++
}
```

Incrementation outside the condition

Problem: Numbers from 1 to 5

- Create a function that prints all the numbers from 1 to 5 **(inclusive)** each on a separate line

Output
1
2
3
4
5

```
function solve () {
  for (let i = 1; i <= 5; i++) {
    //TODO: print
  }
}
```

Problem: Numbers from N to 1

- Write a function that receives a **number** and prints the numbers from **N to 1**. Try using a **while loop**

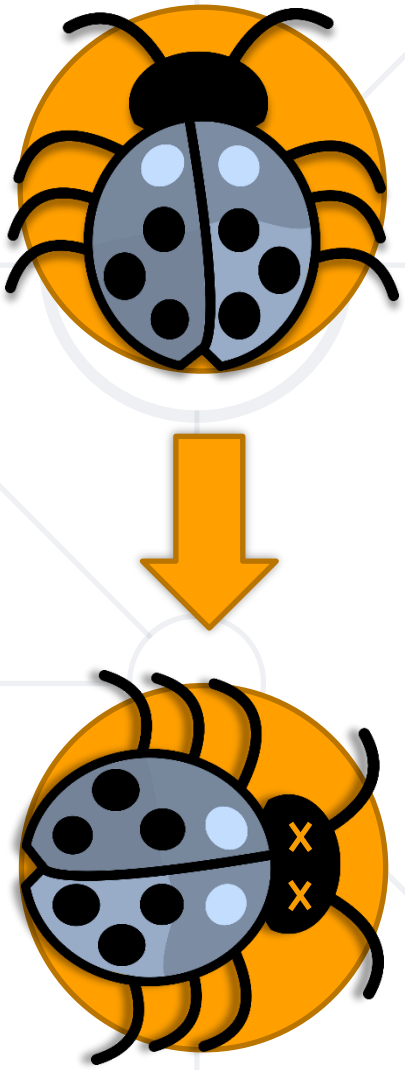
Input	Output
5	5 4 3 2 1

```
function solve(n) {
  while(/*TODO*/) {
    console.log(n);
    n--;
  }
}
solve(5);
```

Debugging the Code

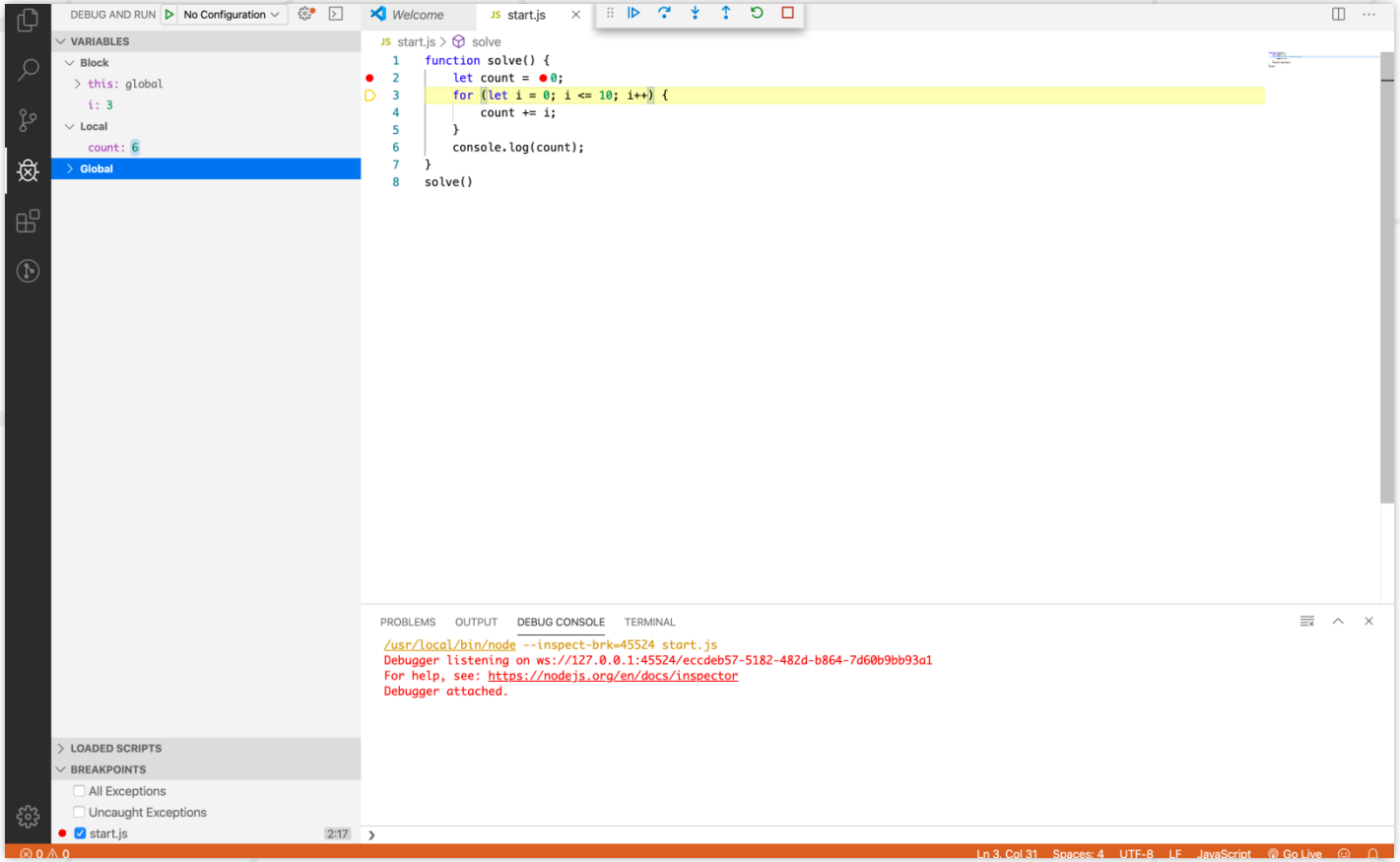
Debugging the Code

- The process of **debugging application** includes:
  - Spotting an error
  - Finding the lines of code that cause the error
  - Fixing the error in the code
  - Testing to check if the error is gone and no new errors are introduced
- Iterative and continuous process



Debugging in Visual Studio Code

- Visual Studio Code has a built-in **debugger**
- It provides:
  - **Breakpoints**
  - Ability to **trace** the code execution
  - Ability to **inspect** variables at runtime



Using the Debugger in Visual Studio Code

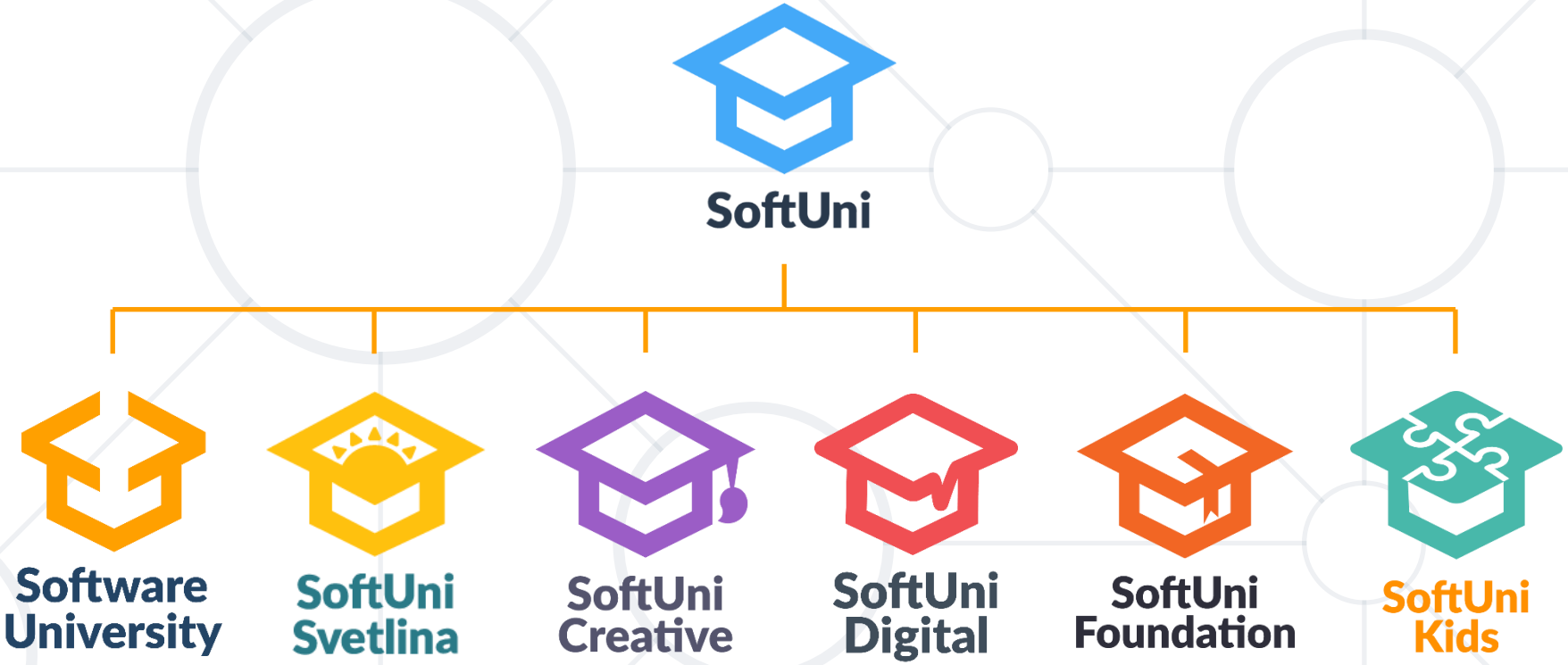
- Start without Debugger: **[Ctrl+F5]**
- Start with Debugger: **[F5]**
- Toggle a breakpoint: **[F9]**
- Trace step by step: **[F10]**
- Force step into: **[F11]**

Live Exercises

Summary

- Declare variables with **'let'**
- Use **if-else** statements to check for conditions
- Use **loops** to avoid repeating code
- Use the **debugger** to check for mistakes in the code

Questions?



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