Fundamentals of C Language

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Programming Language

- Syntax:
  - Set of rules
- Semantics:
  - Meaning of the syntax
- Compilation/Interpretation:
  - Translation to Machine Language
- Automation:
  - Repetitive and complex tasks.
- Problem-Solving:
  - Focus on solution, not on tools.

C language


Ken Thompson & Dennis Ritchie

- Closer to real hardware
- To create OS (Unix in 1969)
  by Dennis Ritchie
  at the Bell Laboratories in 1972
- Procedural programming language
  (general-purpose)

Programming Paradigm

- Way of thinking about and structuring code

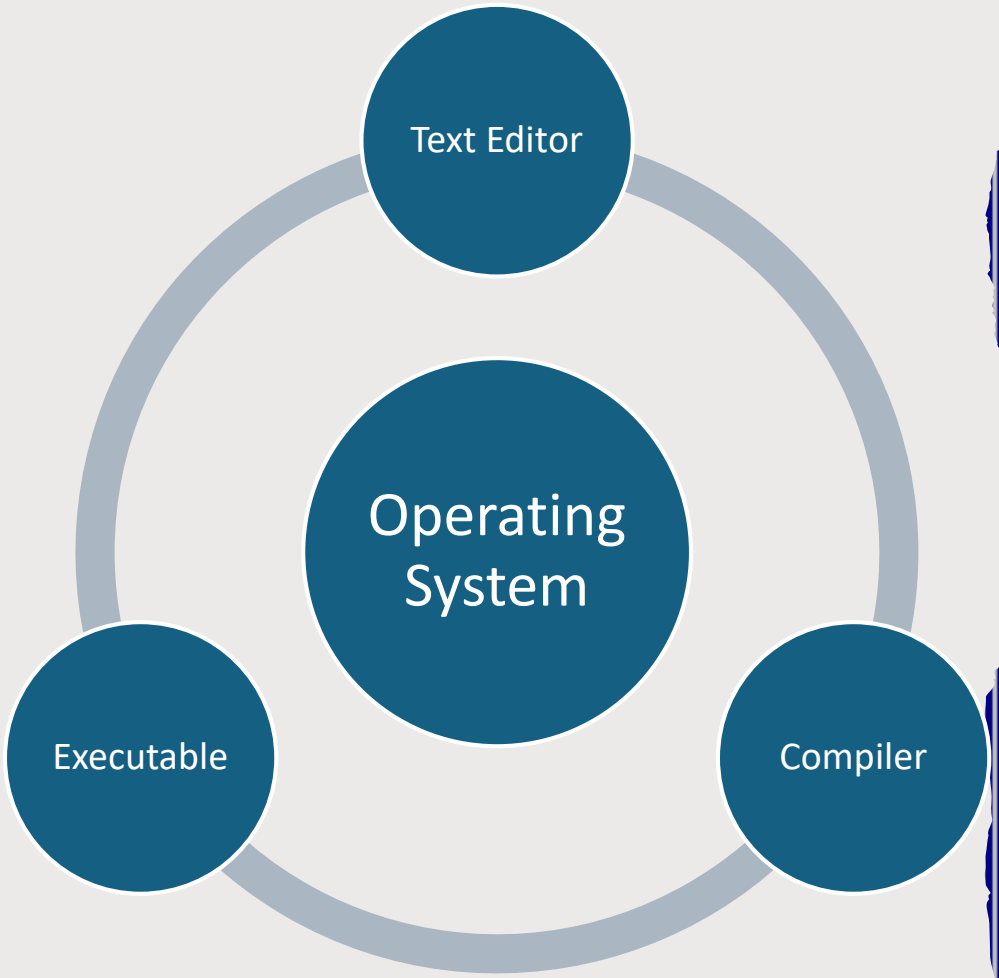
“Most programming languages support multiple paradigms. A programmer's growth involves learning to choose the appropriate programming language and paradigm for the situation.”

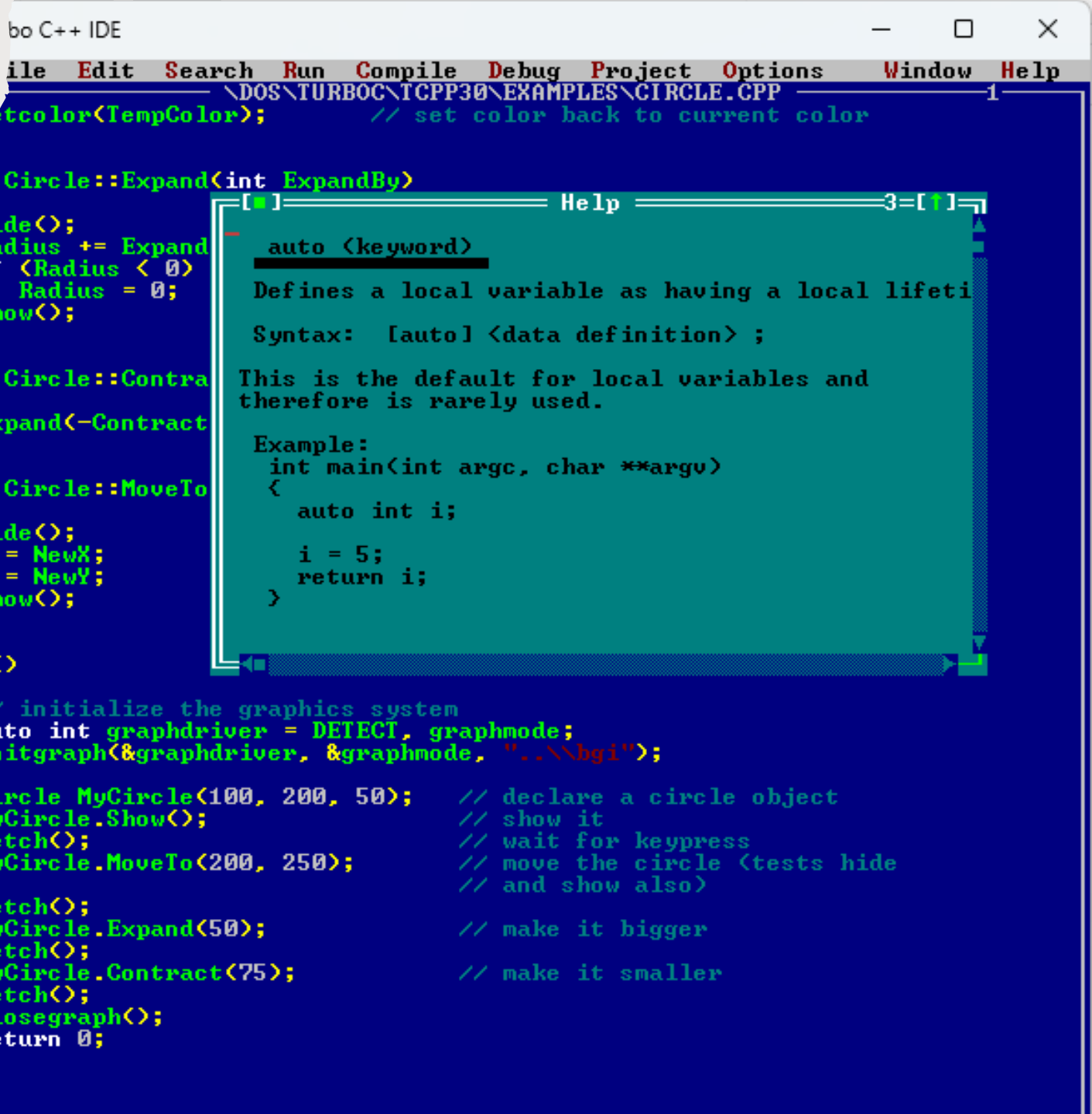
- Mooc.fi

C as a procedural language:

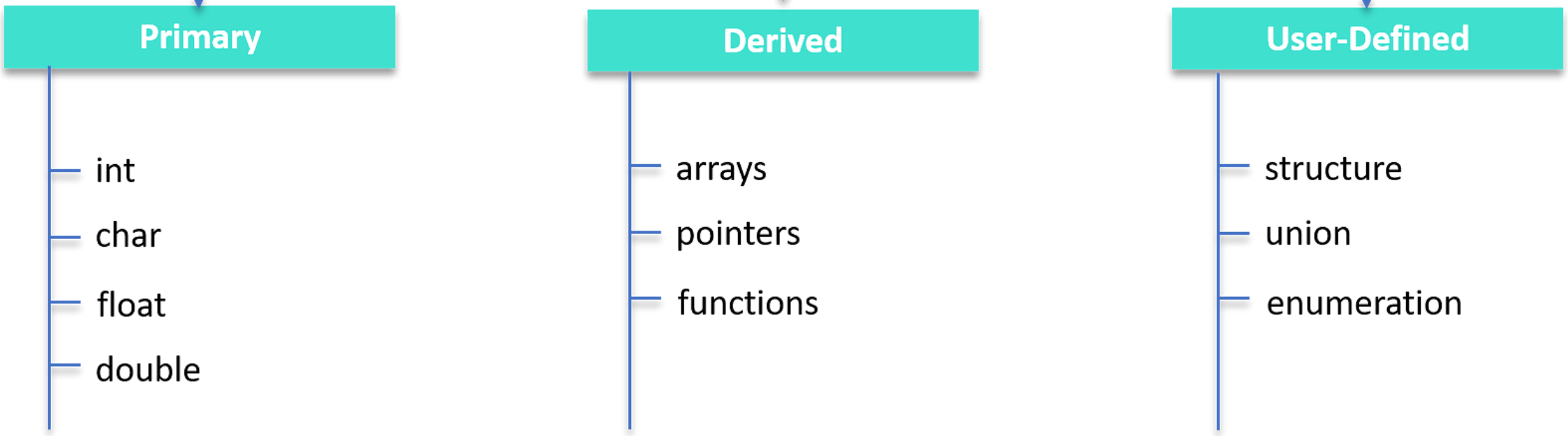
- Function-based
- Sequential execution
- Structured programming

Required Tools





DATA TYPES IN C



Types of Operators

1. Arithmetic Operators: +, -, *, /, %, ++, --
2. Relational Operators: ==, !=, >, <, >=, <=
3. Logical Operators: &&, ||, !
4. Bitwise Operators: &, |, ^, ~, <<, >>
5. Assignment Operators: =, +=, -=, *=, /=, %=, <<=, >>=, &=, |=, ^=
6. Conditional Operator: ?:
7. Cast Operator: (type)
8. Comma Operator: ,
9. Address Operator: &
10. Dereference Operator: * (also known as Indirection Operator or Value at Address Operator)

Decision Making Statements

1. if statement
2. if-else statement
3. nested if-else statement
4. else-if ladder
5. switch statement

Looping statements

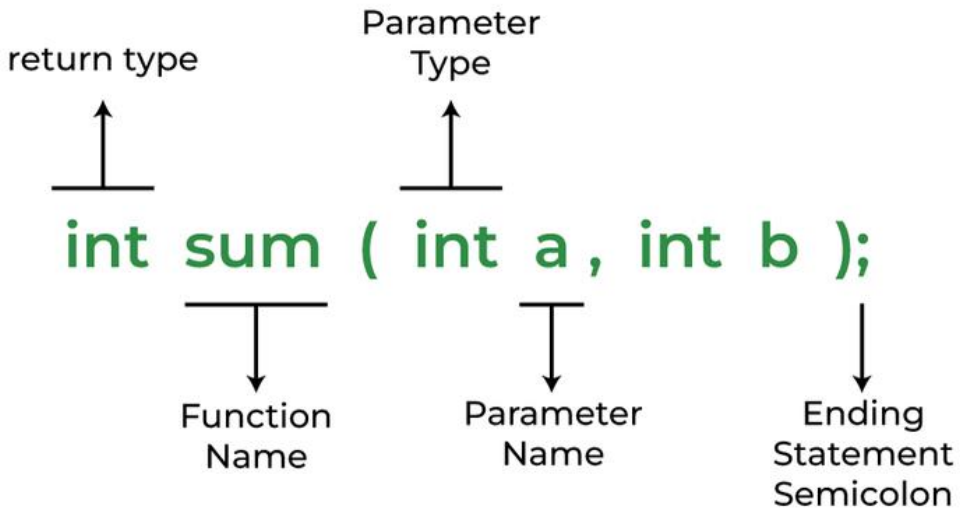
1. for
2. while
3. do…while

Branching statements

1. break
2. continue

Function in C

- Block of code which only runs when it is called
- Aspects of using function
  - Function Declaration
  - Function Definition
  - Function Calls
- Type of arguments:
  - Pass by Value
  - Pass by Reference



Quiz time

1. What is the return type of scanf and printf functions?
2. What is the difference between = and == in C?
3. int a = 5, b = 10; printf("%d", a++ + ++b);
4. Which loop is also called exit-controlled loop?