

CS201

Introduction to Programming

Important mcqs

Lec 1 - What is programming

1. **Which of the following best describes programming?** A) The process of designing and building computers B) The process of writing and testing computer programs C) The process of using computers to solve problems D) The process of analyzing data

Answer: B) The process of writing and testing computer programs

2. **Which of the following is NOT a programming language?** A) Java B) HTML C) Python D) Photoshop

Answer: D) Photoshop

3. **What is the purpose of programming?** A) To design and build computers B) To create user interfaces C) To write computer programs to solve problems D) To manipulate data

Answer: C) To write computer programs to solve problems

4. **Which of the following is a high-level programming language?** A) Assembly language B) C++ C) Machine language D) Binary

Answer: B) C++

5. **Which of the following is a low-level programming language?** A) Java B) Python C) Assembly language D) HTML

Answer: C) Assembly language

6. **What is the role of a compiler in programming?** A) To convert high-level code to machine code B) To debug programs C) To provide an interface for users to interact with the computer D) To store and retrieve data

Answer: A) To convert high-level code to machine code

7. **Which of the following is a programming paradigm?** A) Object-oriented programming B) Web programming C) Mobile app development D) Data analysis

Answer: A) Object-oriented programming

8. **Which of the following is NOT a data type in programming?** A) Integer B) Float C) String D) Sound

Answer: D) Sound

9. **Which of the following is NOT a control structure in programming?** A) If-else statement B) For loop
C) While loop D) Array

Answer: D) Array

10. **Which of the following is a programming tool?** A) Keyboard B) Mouse C) Integrated Development Environment (IDE) D) Printer

Answer: C) Integrated Development Environment (IDE)

Lec 2 - Software Categories

1. Which of the following is an example of system software?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Windows operating system
- d. Google Chrome

Answer: c

2. Which of the following is an example of application software?

- a. Device drivers
- b. Antivirus software
- c. Microsoft Excel
- d. Operating system

Answer: c

3. Which category of software is used for developing software applications?

- a. System software
- b. Application software
- c. Programming software
- d. All of the above

Answer: c

4. Which of the following is a utility software?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Device Manager
- d. Google Chrome

Answer: c

5. Which of the following is a communication software?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Skype
- d. Google Chrome

Answer: c

6. Which of the following is an entertainment software?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Call of Duty
- d. Google Chrome

Answer: c

7. Which of the following is a productivity tool?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Windows operating system
- d. Google Chrome

Answer: a

8. Which of the following is an example of a programming language?

- a. Java
- b. Microsoft Excel
- c. Windows operating system
- d. Google Chrome

Answer: a

9. Which of the following is a system software used for managing computer resources?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Device drivers
- d. Google Chrome

Answer: c

10. Which of the following is an educational software?

- a. Microsoft Word
- b. Adobe Photoshop
- c. Rosetta Stone
- d. Google Chrome

Answer: c

Lec 3 - First C program

1. **What is the purpose of the "Hello, World!" program?**

- A. To introduce the basics of C programming
- B. To display "Hello, World!" on the screen
- C. Both A and B

Answer: C

2. **Which function is used to display text on the screen in a C program?**

- A. print
- B. println
- C. printf

Answer: C

3. **What is the syntax for writing a "Hello, World!" program in C?**

- A. print("Hello, World!")
- B. printf("Hello, World!");
- C. println("Hello, World!");

Answer: B

4. **Which keyword is used to indicate the beginning of the main function in a C program?**

- A. function
- B. main
- C. start

Answer: B

5. **Which symbol is used to end a statement in a C program?**

- A. ;
- B. :
- C. ,

Answer: A

6. **Which header file must be included to use printf() function in a C program?**

- A. <stdio.h>
- B. <stdlib.h>
- C. <string.h>

Answer: A

7. **Which type of brackets are used to enclose the main function in a C program?**

- A. ()
- B. {}
- C. []

Answer: B

8. Which operator is used to assign a value to a variable in C?

- A. =
- B. ==
- C. :

Answer: A

9. Which data type is used to store whole numbers in C?

- A. float
- B. char
- C. int

Answer: C

10. What is the output of the "Hello, World!" program?

- A. Hello, World!
- B. World, Hello!
- C. Hello!

Answer: A

Lec 4 - Sample Program

1. What is a sample program?

- A. A program that demonstrates a particular programming concept
- B. A program that performs complex calculations
- C. A program that is used for debugging
- D. A program that is used for system administration

Answer: A

2. Where can sample programs be found?

- A. In textbooks
- B. In online tutorials
- C. In programming language documentation
- D. All of the above

Answer: D

3. What is the purpose of a sample program?

- A. To demonstrate a particular programming concept
- B. To perform complex calculations
- C. To debug a program
- D. To administer a system

Answer: A

4. How much code is typically included in a sample program?

- A. The minimum amount required to illustrate the concept
- B. A moderate amount that covers multiple concepts
- C. A large amount that includes many advanced features
- D. No specific amount, it varies depending on the program

Answer: A

5. Who are sample programs useful for?

- A. Beginners learning programming
- B. Advanced programmers
- C. System administrators
- D. None of the above

Answer: A

6. Are sample programs always simple?

- A. Yes, they are always simple
- B. No, they can be complex as well
- C. It depends on the programming language
- D. It depends on the purpose of the program

Answer: B

7. **What is the main source of sample programs?**

- A. Programming contests
- B. Open-source software
- C. Closed-source software
- D. Computer science journals

Answer: B

8. **What is the role of a sample program in learning programming?**

- A. To help learners build a strong foundation in programming
- B. To provide a shortcut to mastering programming
- C. To demonstrate only the most advanced programming concepts
- D. To make learning programming more difficult

Answer: A

9. **Can sample programs be used to build more complex programs?**

- A. No, they are only used for learning
- B. Yes, they can be used as a starting point
- C. No, they are not relevant for building complex programs
- D. Yes, but only for specific programming languages

Answer: B

10. **Are sample programs only used in the beginning stages of learning programming?**

- A. Yes, they are only useful for beginners
- B. No, they can be useful for programmers at all levels
- C. They are only useful for intermediate programmers
- D. They are only useful for advanced programmers

Answer: B

Lec 5 - Conditional Statements

1. What is the syntax for an if statement in Python?

- A. if (condition):
- B. if [condition]:
- C. if {condition}:
- D. if <condition>:

Answer: A

2. What is the output of the following code snippet?

```
x = 5
if x > 3:
    print("x is greater than 3")
else:
    print("x is less than or equal to 3")
```

- A. x is greater than 3
- B. x is less than or equal to 3
- C. SyntaxError
- D. NameError

Answer: A

3. Which conditional statement can handle multiple conditions in Python?

- A. if statement
- B. if-else statement
- C. if-elif statement
- D. switch statement

Answer: C

4. What is the syntax for an if-else statement in JavaScript?

- A. if (condition) {code block 1;} else {code block 2;}
- B. if [condition] {code block 1;} else {code block 2;}
- C. if {condition} {code block 1;} else {code block 2;}
- D. if <condition> {code block 1;} else {code block 2;}

Answer: A

5. What is the output of the following code snippet?

```
x = 10
if x > 5:
    print("x is greater than 5")
elif x > 8:
```

```
print("x is greater than 8")
else:
print("x is less than or equal to 5")
```

- A. x is greater than 5
- B. x is greater than 8
- C. x is less than or equal to 5
- D. SyntaxError

Answer: A

6. Which conditional statement is used to execute different code blocks for different values of a variable?

- A. if statement
- B. if-else statement
- C. if-elif statement
- D. switch statement

Answer: D

7. What is the output of the following code snippet?

```
x = 10
if x > 5 and x < 15:
print("x is between 5 and 15")
```

- A. x is between 5 and 10
- B. x is between 10 and 15
- C. x is greater than 5 and less than 15
- D. x is not between 5 and 15

Answer: C

8. Which of the following is an example of a Boolean expression?

- A. 5 + 3
- B. "Hello, world!"
- C. True
- D. None

Answer: C

9. What is the output of the following code snippet?

```
x = "apple"
if "p" in x:
print("The letter p is in x")
```

- A. The letter p is in x
- B. The letter p is not in x

- C. SyntaxError
- D. NameError

Answer: A

10. What is the output of the following code snippet?

```
x = 5
if x == 5:
    x = x + 1
if x > 5:
    x = x + 2
print(x)
```

- A. 5
- B. 6
- C. 7
- D. 8

Answer: C

Lec 6 - Repetition Structure (Loop)

- Which of the following is not a type of loop structure?**
 - For loop
 - While loop
 - Repeat loop
 - Do-while loop

Answer: C) Repeat loop
- Which loop structure is best suited for situations where the loop must be executed at least once?**
 - For loop
 - While loop
 - Do-while loop
 - All of the above

Answer: C) Do-while loop
- Which loop structure executes its body at least once before evaluating the loop condition?**
 - For loop
 - While loop
 - Do-while loop
 - All of the above

Answer: C) Do-while loop
- Which loop structure is typically used when the number of iterations is known in advance?**
 - For loop
 - While loop
 - Do-while loop
 - All of the above

Answer: A) For loop
- Which keyword is used to skip the rest of the current iteration in a loop structure?**
 - Continue
 - Break
 - Skip
 - Exit

Answer: A) Continue
- Which keyword is used to exit the loop structure immediately?**
 - Continue
 - Break
 - Skip
 - Exit

Answer: B) Break
- Which of the following statements is true regarding nested loop structures?**
 - Nested loop structures are not allowed in most programming languages.
 - Nested loop structures can only be used with for loops.
 - Nested loop structures can increase the time complexity of a program.
 - None of the above.

Answer: C) Nested loop structures can increase the time complexity of a program.

8. Which of the following is an infinite loop?

- A) for (int i = 0; i < 10; i++)
- B) while (true) {}
- C) do { } while (false);
- D) None of the above.

Answer: B) while (true) {}

9. Which loop structure can be used to iterate over elements of an array?

- A) For loop
- B) While loop
- C) Do-while loop
- D) All of the above

Answer: A) For loop

10. Which loop structure is best suited for situations where the number of iterations is not known in advance?

- A) For loop
- B) While loop
- C) Do-while loop
- D) All of the above

Answer: B) While loop

Lec 7 - Do-While Statement

1. **Which of the following statements is true about the do-while loop?**
- A. The loop condition is evaluated before the loop body is executed
 - B. The loop body is executed at least once before the loop condition is evaluated
 - C. The loop executes only if the condition is true
 - D. The loop executes only if the condition is false

Answer: B

2. **Which loop executes at least once?**
- A. While loop
 - B. For loop
 - C. Do-while loop
 - D. None of the above

Answer: C

3. **What is the syntax for a do-while loop?**
- A. `do { loop body } while (condition);`
 - B. `while (condition) { loop body }`
 - C. `for (initialization; condition; increment) { loop body }`
 - D. None of the above

Answer: A

4. **What is the purpose of the do-while loop?**
- A. To execute a block of code repeatedly based on a condition
 - B. To execute a block of code only if the condition is true
 - C. To execute a block of code only if the condition is false
 - D. None of the above

Answer: A

5. **What happens if the condition of the do-while loop is false from the beginning?**
- A. The loop body is executed once
 - B. The loop body is not executed at all
 - C. The loop body is executed indefinitely
 - D. None of the above

Answer: A

6. **Which statement is used to exit a loop immediately?**
- A. `if` statement
 - B. `break` statement
 - C. `continue` statement
 - D. None of the above

Answer: B

7. **Which statement is used to skip the current iteration of a loop and move on to the next one?**
- A. if statement
 - B. break statement
 - C. continue statement
 - D. None of the above

Answer: C

8. **What is the difference between a while loop and a do-while loop?**
- A. The loop body is executed before the loop condition in the while loop, and vice versa in the do-while loop
 - B. The loop condition is checked before the loop body in the while loop, and vice versa in the do-while loop
 - C. There is no difference between them
 - D. None of the above

Answer: B

9. **Can a do-while loop be nested inside another loop?**
- A. Yes
 - B. No
 - C. It depends on the programming language
 - D. None of the above

Answer: A

10. **Which loop structure is best suited for situations where the number of iterations is known in advance?**
- A. while loop
 - B. do-while loop
 - C. for loop
 - D. None of the above

Answer: C

Lec 8 - Switch Statement

1. **What is a switch statement?**

- A) A type of conditional statement
- B) A type of loop statement
- C) A type of function definition
- D) A type of data type

Answer: A

2. **What is the purpose of a switch statement?**

- A) To compare two variables
- B) To execute different code blocks based on a match
- C) To loop through a series of values
- D) To define a function

Answer: B

3. **Which keyword is used to define a switch statement in Java?**

- A) for
- B) while
- C) switch
- D) do

Answer: C

4. **Which of the following is true about switch statements?**

- A) It can have multiple default cases
- B) It can only have one case
- C) It can only have one default case
- D) It cannot have a default case

Answer: C

5. **What happens if no case matches in a switch statement?**

- A) The program crashes
- B) The default case is executed
- C) The program skips the switch statement
- D) An error is thrown

Answer: B

6. **Which of the following data types can be used in a switch statement in C++?**

- A) char
- B) float
- C) double
- D) bool

Answer: A

7. **Can a switch statement be used with strings in Java?**

- A) Yes
- B) No

Answer: A

8. **Which keyword is used to exit a switch statement in Java?**

- A) break
- B) continue
- C) exit
- D) return

Answer: A

9. **Which of the following is an advantage of using switch statements?**

- A) It makes the code more complex
- B) It is slower than if-else statements
- C) It makes the code easier to read
- D) It cannot handle multiple cases

Answer: C

10. **Which of the following is a common use case for switch statements?**

- A) To sort data in ascending order
- B) To implement a recursive function
- C) To validate user input
- D) To create an infinite loop

Answer: C

Lec 9 - Introduction

1. What is the purpose of an introduction in programming?
 - a) To define the problem to be solved
 - b) To initialize variables
 - c) To define functions
 - d) All of the above

Answer: a)

2. Which of the following is not a part of the introduction of a program?
 - a) Setting up the environment
 - b) Defining variables
 - c) Writing the main program logic
 - d) Defining functions

Answer: c)

3. Which of the following is a good practice when writing an introduction in programming?
 - a) Writing lengthy and detailed explanations
 - b) Using unclear language and jargon
 - c) Being concise and clear
 - d) Ignoring any potential issues or edge cases

Answer: c)

4. What is the benefit of initializing variables in the introduction of a program?
 - a) It saves time
 - b) It makes the code easier to read and understand
 - c) It reduces the chance of errors
 - d) All of the above

Answer: d)

5. Which of the following is true about defining functions in the introduction of a program?
 - a) It is optional
 - b) It is mandatory
 - c) It is not recommended
 - d) It depends on the programming language

Answer: a)

6. What is the role of comments in the introduction of a program?
 - a) To explain the purpose and logic of the program
 - b) To provide instructions on how to use the program
 - c) To list the variables and functions used in the program
 - d) All of the above

Answer: d)

7. What is the purpose of setting up the environment in the introduction of a program?
- a) To create a comfortable work environment for the programmer
 - b) To ensure that the program runs smoothly and without errors
 - c) To define the problem to be solved
 - d) None of the above

Answer: b)

8. Which of the following is a good practice when defining variables in the introduction of a program?
- a) Using vague and unclear names for variables
 - b) Defining all variables at the end of the program
 - c) Initializing variables with default values
 - d) Ignoring the data types of variables

Answer: c)

9. What is the main goal of the introduction of a program?
- a) To provide an overview of the program's purpose and functionality
 - b) To list all the code that needs to be executed
 - c) To define the input and output of the program
 - d) To test the program for errors

Answer: a)

10. Which of the following is not a potential issue to consider when writing the introduction of a program?
- a) Memory leaks
 - b) Input validation
 - c) Edge cases
 - d) Code optimization

Answer: d)

Lec 10 - Header Files

- 1. What is the purpose of a header file in C/C++ programming?**
 - a) To contain function and variable declarations
 - b) To contain executable code
 - c) To store data
 - d) To control the flow of the program

Answer: a
- 2. Which preprocessor directive is used to include a header file in a C/C++ program?**
 - a) #define
 - b) #include
 - c) #ifdef
 - d) #ifndef

Answer: b
- 3. Can a header file be included multiple times in the same program?**
 - a) Yes
 - b) No

Answer: a
- 4. Which of the following is a standard C library header file?**
 - a) <iostream.h>
 - b) <stdio.h>
 - c) <vector.h>
 - d) <mathematics.h>

Answer: b
- 5. What is the file extension of a header file in C/C++ programming?**
 - a) .c
 - b) .h
 - c) .cpp
 - d) .hpp

Answer: b
- 6. Which of the following statements is true about header files?**
 - a) They contain both function and variable definitions
 - b) They are not necessary for compiling a program
 - c) They are used to separate interface and implementation
 - d) They can be compiled separately from the rest of the program

Answer: c
- 7. What is the purpose of a guard clause in a header file?**
 - a) To prevent multiple inclusion of the same file
 - b) To control the flow of the program
 - c) To define constants and macros
 - d) To declare functions and variables

Answer: a
- 8. Which of the following is not a standard C++ library header file?**
 - a) <iostream>
 - b) <fstream>

c) <vector.h>

d) <string>

Answer: c

9. Can a header file be empty?

a) Yes

b) No

Answer: a

10. Which of the following statements is true about including header files?

a) Including unnecessary header files can slow down compilation time

b) Including header files is only necessary for large programs

c) Including header files is not necessary for object-oriented programming

d) Including header files does not affect the readability or maintainability of the code

Answer: a

Lec 11 - Introduction 2

1. **What is the purpose of an introduction in programming?** a) To define the problem to be solved b) To initialize variables c) To define functions d) All of the above

Answer: a)

2. **Which of the following is not a part of the introduction of a program?** a) Setting up the environment b) Defining variables c) Writing the main program logic d) Defining functions

Answer: c)

3. **Which of the following is a good practice when writing an introduction in programming?** a) Writing lengthy and detailed explanations b) Using unclear language and jargon c) Being concise and clear d) Ignoring any potential issues or edge cases

Answer: c)

4. **What is the benefit of initializing variables in the introduction of a program?** a) It saves time b) It makes the code easier to read and understand c) It reduces the chance of errors d) All of the above

Answer: d)

5. **Which of the following is true about defining functions in the introduction of a program?** a) It is optional b) It is mandatory c) It is not recommended d) It depends on the programming language

Answer: a)

6. **What is the role of comments in the introduction of a program?** a) To explain the purpose and logic of the program b) To provide instructions on how to use the program c) To list the variables and functions used in the program d) All of the above

Answer: d)

7. **What is the purpose of setting up the environment in the introduction of a program?** a) To create a comfortable work environment for the programmer b) To ensure that the program runs smoothly and without errors c) To define the problem to be solved d) None of the above

Answer: b)

8. **Which of the following is a good practice when defining variables in the introduction of a program?** a) Using vague and unclear names for variables b) Defining all variables at the end of the program c) Initializing variables with default values d) Ignoring the data types of variables

Answer: c)

9. **What is the main goal of the introduction of a program?** a) To provide an overview of the program's purpose and functionality b) To list all the code that needs to be executed c) To define the input and output of the program d) To test the program for errors

Answer: a)

10. Which of the following is not a potential issue to consider when writing the introduction of a program? a) Memory leaks b) Input validation c) Edge cases d) Code optimization

Answer: d)

Lec 12 - Character Arrays

1. What is the size of a character array that can store a string of length 10?

- a) 10
- b) 11
- c) 12
- d) 13

Answer: b) 11

2. Which of the following is the correct way to initialize a character array?

- a) `char array[] = "Hello";`
- b) `char array[5] = "Hello";`
- c) `char array[6] = {'H', 'e', 'l', 'l', 'o'};`
- d) All of the above

Answer: d) All of the above

3. Which of the following string functions can be used to concatenate two character arrays?

- a) `strlen()`
- b) `strcpy()`
- c) `strcat()`
- d) `strcmp()`

Answer: c) `strcat()`

4. Which of the following string functions can be used to copy one character array to another?

- a) `strlen()`
- b) `strcpy()`
- c) `strcat()`
- d) `strcmp()`

Answer: b) `strcpy()`

5. What is the output of the following code snippet?

```
char str1[] = "Hello";  
char str2[] = "World";  
strcat(str1, str2);  
printf("%s", str1);
```

- a) Hello World
- b) World Hello
- c) Hello
- d) World

Answer: a) Hello World

6. Which of the following is not a valid way to declare a character array?

- a) `char array[10];`
- b) `char* array = "Hello";`
- c) `char array[] = "Hello";`
- d) All of the above are valid

Answer: b) `char* array = "Hello";`

7. Which of the following string functions returns the length of a string?

- a) `strlen()`
- b) `strcpy()`
- c) `strcat()`

d) strcmp()

Answer: a) strlen()

8. What is the output of the following code snippet?

```
char str1[10] = "Hello";
```

```
char str2[10];
```

```
strcpy(str2, str1);
```

```
printf("%s", str2);
```

a) Hello

b) World

c) None of the above

d) It will result in a compile-time error

Answer: a) Hello

9. What is the size of a character array that can store an empty string?

a) 0

b) 1

c) 2

d) It is not possible to declare an empty character array

Answer: b) 1

10. Which of the following string functions returns a negative, zero, or positive value depending on whether the first string is less than, equal to, or greater than the second string?

a) strlen()

b) strcpy()

c) strcat()

d) strcmp()

Answer: d) strcmp()

Lec 13 - Array Manipulation

1. Which of the following is not an operation in array manipulation?

- A) Addition
- B) Multiplication
- C) Sorting
- D) Searching

Answer: B) Multiplication

2. Which function is used to calculate the length of an array in C++?

- A) length()
- B) size()
- C) lengthof()
- D) sizeof()

Answer: D) sizeof()

3. Which function is used to sort an array in C++?

- A) sort()
- B) merge()
- C) swap()
- D) copy()

Answer: A) sort()

4. Which of the following is a disadvantage of arrays?

- A) They can be resized easily
- B) They can only store elements of the same data type
- C) They are not index-based
- D) They are inefficient for searching and sorting

Answer: B) They can only store elements of the same data type

5. What is the complexity of linear search algorithm?

- A) $O(\log n)$
- B) $O(n)$
- C) $O(n \log n)$
- D) $O(1)$

Answer: B) $O(n)$

6. Which operator is used to access an element of an array in C++?

- A) ()
- B) {}
- C) []
- D) /

Answer: C) []

7. Which algorithm is used for sorting in the STL library of C++?

- A) Bubble Sort
- B) Insertion Sort
- C) Selection Sort
- D) Quick Sort

Answer: D) Quick Sort

8. What is the maximum number of dimensions that an array can have in C++?

- A) 1
- B) 2
- C) 3
- D) There is no limit

Answer: D) There is no limit

9. Which function is used to delete an element from an array in C++?

- A) remove()
- B) delete()
- C) erase()
- D) pop()

Answer: C) erase()

10. What is the time complexity of binary search algorithm?

- A) $O(\log n)$
- B) $O(n)$
- C) $O(n \log n)$
- D) $O(1)$

Answer: A) $O(\log n)$

Lec 14 - Pointers

1. What is a pointer in C++?

- a) A keyword used to declare variables
- b) A variable that stores the memory address of another variable
- c) A data type used to store text
- d) A type of loop used in programming

Answer: b) A variable that stores the memory address of another variable

2. Which operator is used to declare a pointer variable in C++?

- a) *
- b) &
- c) \$
- d) #

Answer: a) *

3. Which of the following statements is true about null pointers in C++?

- a) They point to the address 0x0000.
- b) They point to the address 0xFFFF.
- c) They are not allowed in C++.
- d) They can be used to indicate that a pointer does not point to anything.

Answer: d) They can be used to indicate that a pointer does not point to anything.

4. What is the difference between a pointer and a reference in C++?

- a) A pointer is a variable that holds a memory address, while a reference is an alias for another variable.
- b) A reference is a variable that holds a memory address, while a pointer is an alias for another variable.
- c) There is no difference between a pointer and a reference.
- d) A pointer is used for dynamic memory allocation, while a reference is used for static memory allocation.

Answer: a) A pointer is a variable that holds a memory address, while a reference is an alias for another variable.

5. What is the use of the `new` operator in C++?

- a) To declare a new variable
- b) To delete a variable
- c) To allocate memory for a new object
- d) To free memory for an existing object

Answer: c) To allocate memory for a new object

6. What is the use of the `delete` operator in C++?

- a) To declare a new variable
- b) To delete a variable
- c) To allocate memory for a new object

d) To free memory for an existing object

Answer: d) To free memory for an existing object

7. **What is a dangling pointer?**

- a) A pointer that points to an invalid memory address
- b) A pointer that points to a valid memory address
- c) A pointer that points to a null value
- d) A pointer that points to an uninitialized value

Answer: a) A pointer that points to an invalid memory address

8. **Which of the following is the correct syntax to declare a pointer to a constant integer in C++?**

- a) `const int *ptr;`
- b) `int const *ptr;`
- c) `const int * const ptr;`
- d) `int * const ptr;`

Answer: b) `int const *ptr;`

9. **What is a void pointer in C++?**

- a) A pointer that points to a function
- b) A pointer that points to a structure
- c) A pointer that has no data type associated with it
- d) A pointer that points to an integer value

Answer: c) A pointer that has no data type associated with it

10. **What is the use of the `reinterpret_cast` operator in C++?**

- a) To cast a pointer from one data type to another
- b) To cast a reference from one data type to another
- c) To cast a variable from one data type to another
- d) To cast a pointer from one function to another

Answer: a) To cast a pointer from one data type to another

Lec 15 - Introduction 3

1. **What is the purpose of an introduction in programming?**

- a) To define the problem to be solved
- b) To initialize variables
- c) To define functions
- d) All of the above

Answer: a)

2. **Which of the following is not a part of the introduction of a program?**

- a) Setting up the environment
- b) Defining variables
- c) Writing the main program logic
- d) Defining functions

Answer: c)

3. **Which of the following is a good practice when writing an introduction in programming?**

- a) Writing lengthy and detailed explanations
- b) Using unclear language and jargon
- c) Being concise and clear
- d) Ignoring any potential issues or edge cases

Answer: c)

4. **What is the benefit of initializing variables in the introduction of a program?**

- a) It saves time
- b) It makes the code easier to read and understand
- c) It reduces the chance of errors
- d) All of the above

Answer: d)

5. **Which of the following is true about defining functions in the introduction of a program?**

- a) It is optional
- b) It is mandatory
- c) It is not recommended
- d) It depends on the programming language

Answer: a)

6. **What is the role of comments in the introduction of a program?**

- a) To explain the purpose and logic of the program
- b) To provide instructions on how to use the program
- c) To list the variables and functions used in the program
- d) All of the above

Answer: d)

7. **What is the purpose of setting up the environment in the introduction of a program?**
- a) To create a comfortable work environment for the programmer
 - b) To ensure that the program runs smoothly and without errors
 - c) To define the problem to be solved
 - d) None of the above

Answer: b)

8. **Which of the following is a good practice when defining variables in the introduction of a program?**
- a) Using vague and unclear names for variables
 - b) Defining all variables at the end of the program
 - c) Initializing variables with default values
 - d) Ignoring the data types of variables

Answer: c)

9. **What is the main goal of the introduction of a program?**
- a) To provide an overview of the program's purpose and functionality
 - b) To list all the code that needs to be executed
 - c) To define the input and output of the program
 - d) To test the program for errors

Answer: a)

10. **Which of the following is not a potential issue to consider when writing the introduction of a program?**
- a) Memory leaks
 - b) Input validation
 - c) Edge cases
 - d) Code optimization

Answer: d)

Lec 16 - Pointers (continued)

1. What is the value of the pointer variable ptr after the following code is executed?

arduino

Copy code

```
int *ptr; int x = 5; ptr = &x;
```

- a) 0
- b) 5
- c) Memory address of x
- d) Error

Answer: c) Memory address of x

2. Which operator is used to access the value at a memory location pointed to by a pointer?

- a) &
- b) *
- c) \$
- d) #

Answer: b) *

3. What is the purpose of a null pointer?

- a) It points to the memory location containing 0.
- b) It points to the memory location containing NULL.
- c) It is a pointer that has not been initialized.
- d) It is a pointer that points to the beginning of an array.

Answer: b) It points to the memory location containing NULL.

4. What is the output of the following code?

perl

Copy code

```
int arr[3] = {1, 2, 3}; int *ptr = &arr[1]; printf("%d", *ptr);
```

- a) 1
- b) 2
- c) 3
- d) Error

Answer: b) 2

5. What is the output of the following code?

perl

Copy code

```
int arr[3] = {1, 2, 3}; int *ptr = arr; printf("%d", *(ptr + 2));
```

- a) 1
- b) 2
- c) 3
- d) Error

Answer: c) 3

6. What is the difference between a pointer and a reference?
- a) A pointer is a variable that holds the memory address of another variable, while a reference is an alias for another variable.
 - b) A pointer is a reference to another variable, while a reference is a variable that holds the memory address of another variable.
 - c) There is no difference between a pointer and a reference.
 - d) A pointer can be used with any data type, while a reference is limited to specific data types.

Answer: a) A pointer is a variable that holds the memory address of another variable, while a reference is an alias for another variable.

7. What is the purpose of the & operator in pointer operations?
- a) It returns the memory address of a variable.
 - b) It dereferences a pointer variable.
 - c) It assigns a value to a pointer variable.
 - d) It tests a pointer for a null value.

Answer: a) It returns the memory address of a variable.

8. What is a dangling pointer?
- a) A pointer that points to a memory location that has been freed.
 - b) A pointer that points to a null value.
 - c) A pointer that has been assigned an incorrect memory address.
 - d) A pointer that points to the beginning of an array.

Answer: a) A pointer that points to a memory location that has been freed.

9. What is the output of the following code?

perl

Copy code

```
int arr[3] = {1, 2, 3}; int *ptr = arr; *ptr = 4; printf("%d", arr[0]);
```

- a) 1
- b) 2
- c) 3
- d) 4

Answer: d) 4

10. What is the purpose of pointer arithmetic?
 - a) To perform arithmetic operations on the memory locations pointed to by pointers.
 - b) To perform arithmetic operations on the values

Lec 17 - String Handling

1. What is the standard library function to compare two strings?

- a) strcat()
- b) strcmp()
- c) strlen()
- d) strcpy()

Answer: b) strcmp()

2. What is the standard library function to find the length of a string?

- a) strcat()
- b) strcmp()
- c) strlen()
- d) strcpy()

Answer: c) strlen()

3. Which function can be used to convert a string to a floating-point number?

- a) atof()
- b) atoi()
- c) atol()
- d) strtod()

Answer: a) atof()

4. Which function is used to concatenate two strings?

- a) strcat()
- b) strcmp()
- c) strlen()
- d) strcpy()

Answer: a) strcat()

5. Which function is used to copy one string to another?

- a) strcat()
- b) strcmp()
- c) strlen()
- d) strcpy()

Answer: d) strcpy()

6. What is the maximum length of a string in C?

- a) 255 characters
- b) 256 characters
- c) 512 characters
- d) There is no maximum length

Answer: d) There is no maximum length

7. Which function can be used to find the first occurrence of a character in a string?

- a) strchr()
- b) strrchr()
- c) strstr()
- d) strcmp()

Answer: a) strchr()

8. **What is the standard library function to convert a string to an integer?**

- a) atoi()
- b) atof()
- c) atol()
- d) strtol()

Answer: a) atoi()

9. **Which function can be used to extract a substring from a string?**

- a) strtok()
- b) strstr()
- c) strchr()
- d) strncpy()

Answer: d) strncpy()

10. **What is the standard library function to convert an integer to a string?**

- a) itoa()
- b) atoi()
- c) ltoa()
- d) strtol()

Answer: a) itoa()

Lec 18 - Files

1. Which function is used to open a file in C?

- a) fopen()
- b) close()
- c) read()
- d) write()

Answer: a) fopen()

2. Which mode is used to open a file for writing in C?

- a) "r"
- b) "w"
- c) "a"
- d) "x"

Answer: b) "w"

3. What is the syntax for opening a file in read mode?

- a) fopen("filename", "r")
- b) fopen("r", "filename")
- c) fopen("filename", read)
- d) fopen(read, "filename")

Answer: a) fopen("filename", "r")

4. Which function is used to close a file in C?

- a) close()
- b) fclose()
- c) endfile()
- d) finish()

Answer: b) fclose()

5. Which function is used to write data to a file in C?

- a) fread()
- b) fwrite()
- c) fprintf()
- d) printf()

Answer: b) fwrite()

6. Which mode is used to open a file for appending data in C?

- a) "r"
- b) "w"
- c) "a"
- d) "x"

Answer: c) "a"

7. What is the syntax for opening a file in write mode?

- a) fopen("filename", "w")
- b) fopen("w", "filename")
- c) fopen("filename", write)
- d) fopen(write, "filename")

Answer: a) fopen("filename", "w")

8. Which function is used to read data from a file in C?

- a) fread()
- b) fwrite()
- c) fprintf()
- d) printf()

Answer: a) fread()

9. Which function is used to move the file pointer to a specific position within the file?

- a) fpos()
- b) fseek()
- c) fmove()
- d) fshift()

Answer: b) fseek()

10. Which mode is used to open a file for both reading and writing in C?

- a) "r+"
- b) "w+"
- c) "a+"
- d) "x+"

Answer: a) "r+"

Lec 19 - Sequential Access Files (Continued)

1. Which of the following is true about Sequential Access Files?

- a) Data can be accessed randomly
- b) Data can only be accessed in a particular order
- c) They are used for real-time processing
- d) They are inefficient in handling large amounts of data

Answer: b) Data can only be accessed in a particular order

2. Which of the following is an advantage of Sequential Access Files?

- a) Random access to data
- b) Require high overhead
- c) Can handle large amounts of data efficiently
- d) Suitable for real-time processing

Answer: c) Can handle large amounts of data efficiently

3. Which of the following is a disadvantage of Sequential Access Files?

- a) Random access to data
- b) Require less overhead
- c) Can handle small amounts of data efficiently
- d) Not suitable for real-time processing

Answer: a) Random access to data

4. Sequential Access Files are commonly used in which of the following applications?

- a) Gaming
- b) Social media
- c) Accounting
- d) Email

Answer: c) Accounting

5. Which of the following is an example of a Sequential Access File?

- a) A database
- b) A text file
- c) A spreadsheet
- d) A binary file

Answer: b) A text file

6. Which of the following is true about writing data to a Sequential Access File?

- a) Data can be written randomly
- b) Data can only be written in a particular order
- c) It is suitable for real-time processing
- d) It requires high overhead

Answer: b) Data can only be written in a particular order

7. **Which of the following is an example of a situation where Sequential Access Files are suitable?**

- a) Searching for a specific record in a database
- b) Modifying a record in a database
- c) Printing a report from a database
- d) Real-time data processing

Answer: c) Printing a report from a database

8. **Which of the following is a disadvantage of using Sequential Access Files for large data sets?**

- a) They are inefficient in handling large amounts of data
- b) They require high overhead
- c) They are not suitable for real-time processing
- d) They allow random access to data

Answer: a) They are inefficient in handling large amounts of data

9. **Which of the following is an advantage of using Sequential Access Files for batch processing?**

- a) They allow random access to data
- b) They are suitable for real-time processing
- c) They require less overhead
- d) They can handle small data sets efficiently

Answer: c) They require less overhead

10. **Which of the following is true about reading data from a Sequential Access File?**

- a) Data can be read randomly
- b) Data can only be read in a particular order
- c) It is suitable for real-time processing
- d) It requires high overhead

Answer: b) Data can only be read in a particular order

Lec 20 - Structures

1. **What is a structure in programming?**

- a. A way to control program flow
- b. A collection of related variables
- c. A type of loop
- d. A type of function

Answer: b

2. **Which of the following is not a common programming language that supports structures?**

- a. C
- b. Python
- c. Java
- d. Assembly

Answer: d

3. **In C programming, how are the members of a structure accessed?**

- a. By using a dot (.) operator
- b. By using a colon (:) operator
- c. By using a semicolon (;) operator
- d. By using a comma (,) operator

Answer: a

4. **What is the purpose of a structure?**

- a. To create a function
- b. To control program flow
- c. To group related variables
- d. To write comments

Answer: c

5. **Which of the following is not a data type that can be a member of a structure?**

- a. Integer
- b. Float
- c. String
- d. Function

Answer: d

6. **Which of the following is a valid way to declare a structure in C?**

- a. `struct myStructure {}`
- b. `myStructure {}`
- c. `myStructure type {}`
- d. `struct type myStructure {}`

Answer: d

7. **Can structures contain other structures?**

- a. Yes
- b. No

Answer: a

8. **What is the difference between a structure and an array?**

- a. Structures are used for numeric data while arrays are used for text data

- b. Structures can hold different data types while arrays can only hold one data type
- c. Structures and arrays are the same thing
- d. Arrays can only hold a fixed number of elements while structures can hold as many as needed

Answer: b

9. **Which of the following is not a common use for structures in programming?**

- a. Representing real-world objects
- b. Grouping related variables
- c. Organizing program flow
- d. Storing data in databases

Answer: c

10. **What is the keyword used to declare a structure in Java?**

- a. struct
- b. class
- c. object
- d. instance

Answer: b

Lec 21 - Bit Manipulation

1. Which operator is used for bit-wise AND in C programming?

- A) &
- B) |
- C) ~
- D) ^

Answer: A) &

2. Which operator is used for bit-wise OR in C programming?

- A) &
- B) |
- C) ~
- D) ^

Answer: B) |

3. Which operator is used for bit-wise NOT in C programming?

- A) &
- B) |
- C) ~
- D) ^

Answer: C) ~

4. Which operator is used for bit-wise XOR in C programming?

- A) &
- B) |
- C) ~
- D) ^

Answer: D) ^

5. Which operator is used for shifting bits to the left in C programming?

- A) <<
- B) >>
- C) &
- D) |

Answer: A) <<

6. Which operator is used for shifting bits to the right in C programming?

- A) <<
- B) >>
- C) &
- D) |

Answer: B) >>

7. What is the result of 0101 AND 0011 in binary?

- A) 0100
- B) 0011
- C) 0001
- D) 0110

Answer: C) 0001

8. What is the result of 1010 OR 1100 in binary?

- A) 1000
- B) 1110
- C) 0010
- D) 0100

Answer: B) 1110

9. What is the result of 1010 XOR 1100 in binary?

- A) 1000
- B) 0110
- C) 0010
- D) 0100

Answer: B) 0110

10. What is the result of shifting 0011 to the left by one bit in binary?

- A) 0010
- B) 0100
- C) 1001
- D) 0110

Answer: B) 0100

Lec 22 - Bitwise Manipulation and Assignment Operator

1. What is the result of the following bitwise AND operation?

yaml

Copy code

```
1010 & 1101
```

- a) 0000
- b) 1000
- c) 1010
- d) 1101

Answer: b) 1000

2. What is the result of the following bitwise OR operation?

yaml

Copy code

```
1010 | 1101
```

- a) 0000
- b) 1000
- c) 1011
- d) 1111

Answer: c) 1011

3. What is the result of the following bitwise XOR operation?

yaml

Copy code

```
1010 ^ 1101
```

- a) 0000
- b) 0111
- c) 1011
- d) 1111

Answer: c) 1011

4. What is the result of the following left shift operation?

bash

Copy code

8. What is the result of the following bitwise AND assignment operation?

CSS

Copy code

1010 1101

- a) a = 0000
- b) a = 1000
- c) a = 1010
- d) a = 1101

Answer: b) a = 1000

9. What is the result of the following bitwise XOR assignment operation?

CSS

Copy code

1010 1101

- a) a = 0000
- b) a = 0111
- c) a = 1011
- d) a = 1111

Answer: c) a = 1011

10. What is the result of the following left shift assignment operation?

CSS

Copy code

1010 2

- a) a = 0010
- b) a = 0100
- c) a = 1000
- d) a = 101000

Answer: d) a = 101000

