

Mock Exam 1: Lectures 1-6 (Variables, Control Flow, Functions, Arrays, Style)

Time Limit: 1 hour

Total Marks: 100

Section A: Multiple Choice Questions (30 marks)

Choose the best answer for each question. 2 marks each.

Question 1: Which is the correct way to declare an integer variable in C? a) `int x;` b) `integer x;` c) `var x;` d) `x: int;`

Question 2: What will this code print?

```
int x = 10;
if (x > 5 && x < 15) {
    printf("Medium");
} else {
    printf("Large");
}
```

a) Medium b) Large c) Nothing d) Error

Question 3: What is the output of this loop?

```
for (int i = 0; i < 3; i++) {
    printf("%d ", i);
}
```

a) 0 1 2 b) 1 2 3 c) 0 1 2 3 d) 1 2

Question 4: Which function prototype is correct for a function that takes two integers and returns their sum? a) `int add(int a, int b);` b) `add(int a, int b);` c) `int add(a, b);` d) `void add(int a, int b);`

Question 5: What is the index of the first element in a C array? a) 1 b) 0 c) -1 d) Depends on the array size

Question 6: What will `numbers[2]` return for this array?

```
int numbers[5] = {10, 20, 30, 40, 50};
```

a) 20 b) 30 c) 2 d) 40

Question 7: Which demonstrates good programming style? a) `int x, y, z;` b) `int student_count;` c) `int a;` d) `int var1;`

Question 8: What happens when you pass a variable to a function in C? a) The original variable is modified b) A copy of the variable is passed c) The variable is deleted d) Nothing happens

Question 9: What does this function do?

```
int mystery(int a, int b) {  
    if (a > b) return a;  
    return b;  
}
```

a) Returns the sum b) Returns the larger value c) Returns the smaller value d) Returns the difference

Question 10: Which is the correct way to initialize an array? a) `int arr[3] = {1, 2, 3, 4};` b) `int arr[3] = {1, 2, 3};` c) `int arr[] = 1, 2, 3;` d) `int arr[3] = 1, 2, 3;`

Question 11: What will this while loop print?

```
int i = 3;  
while (i > 0) {  
    printf("%d ", i);  
    i--;  
}
```

a) 3 2 1 b) 3 2 1 0 c) 1 2 3 d) Infinite loop

Question 12: Which variable name follows good style guidelines? a) `x` b) `temp_value` c) `a1` d) `v`

Question 13: What is the purpose of the `return` statement in a function? a) To end the program b) To send a value back to the caller c) To print a value d) To create a variable

Question 14: How do you access the third element of an array called `scores`? a) `scores[3]` b) `scores[2]` c) `scores(2)` d) `scores.2`

Question 15: What will this code do?

```
int count = 0;  
do {  
    count++;  
    printf("%d ", count);  
} while (count < 2);
```

a) Print: 1 2 b) Print: 0 1 c) Print: 1 d) Print nothing

Section B: Short Answer Questions (25 marks)

Provide brief, clear answers. 5 marks each.

Question 16: Explain the difference between `++i` and `i++`. Give an example where this difference matters.

Question 17: What are the three main parts of a `for` loop? Explain what each part does.

Question 18: List three benefits of using functions in your programs.

Question 19: Explain what "pass by value" means and why it's important to understand when writing functions.

Question 20: What makes code "readable"? Give three specific style guidelines that improve code readability.

Section C: Code Completion (20 marks)

Complete the missing parts of the code. 5 marks each.

Question 21: Complete this function to calculate the average of three numbers:

```
double calculate_average(int a, int b, int c) {  
    double sum = _____;  
    return _____;  
}
```

Question 22: Fill in the blanks to create a loop that prints numbers from 5 down to 1:

```
for (int i = _____; _____ >= 1; _____) {  
    printf("%d ", i);  
}
```

Question 23: Complete this function to find the maximum value in an array:

```
int find_max(int array[], int size) {  
    int max = array[0];  
    for (int i = _____; i < _____; i++) {  
        if (array[i] _____ max) {  
            max = _____;  
        }  
    }  
    return max;  
}
```

Question 24: Complete this grade classification function:

```
char get_letter_grade(int score) {  
    if (score >= 90) {  
        return 'A';  
    } else if (score >= 80) {  
        return 'B';  
    } else if (score >= 70) {  
        return 'C';  
    } else {  
        return 'D';  
    }  
}
```

Section D: Programming Problems (25 marks)

Question 25: Simple Calculator Function (15 marks) Write a function called `simple_calculator` that:

- Takes three parameters: two integers and one character (operation)
- Supports operations: '+', '-', '*', '/'
- Returns the result as a double
- Returns -1 if the operation is invalid or if there's division by zero

Also write a main function that:

- Prompts the user for two numbers and an operation
- Calls your calculator function
- Prints the result or an error message

Question 26: Array Statistics (10 marks) Write a complete program that:

- Creates an array to store 5 integers
- Prompts the user to enter 5 numbers
- Calculates and displays:
 - The sum of all numbers
 - The average (as a double with 2 decimal places)
 - The largest number in the array

Use proper variable names and good programming style.

Answer Template

Section B - Short Answers:

Q16: _____

Q17: _____

Q18: _____

Q19: _____

Q20: _____

Section C - Code Completion:

Q21:

```
double calculate_average(int a, int b, int c) {  
    double sum = _____;  
    return _____;  
}
```

Q22:

```
for (int i = _____; _____ >= 1; _____) {  
    printf("%d ", i);  
}
```

Q23:

```
int find_max(int array[], int size) {  
    int max = array[0];  
    for (int i = _____; i < _____; i++) {  
        if (array[i] _____ max) {  
            max = _____;  
        }  
    }  
    return max;  
}
```

Q24:

```
char get_letter_grade(int score) {  
    if (score >= 90) {  
        return '_____';  
    } else if (score >= 80) {  
        return '_____';  
    } else if (score >= 70) {  
        return '_____';  
    } else {  
        return '_____';  
    }  
}
```

```
}  
}
```

Section D - Programming Problems:

Q25: Simple Calculator

```
// Write your complete calculator program here
```

Q26: Array Statistics

```
// Write your complete program here
```

Marking Rubric

- **MCQ (30 marks):** 2 marks per correct answer
- **Short Answer (25 marks):** 5 marks each - clear understanding and accurate explanation
- **Code Completion (20 marks):** 5 marks each - correct syntax and logic
- **Programming (25 marks):**
 - Q25: Function design (8 marks), Main function (4 marks), Error handling (3 marks)
 - Q26: Array handling (4 marks), Calculations (4 marks), Style (2 marks)

Success Tips:

- Read each question carefully
- Check your syntax
- Use meaningful variable names
- Test your logic with sample values
- Manage your time effectively