Spring 2025, MIS 102 – COMPUTER PROGRAMMING

Quiz 1

姓名:_____ 學號:_____ 系級:_____

1. [60 pts]

1. What is the right order of the six phases of a C development environment?
(1) Programmers create programs in the editor.
(2) Loader puts the program in memory.
(3) Preprocessor program processes the code.
(4) Linker links the object code with the libraries, creates an executable file and stores it on disk.
(5) Compilers create object code and store it on disk.
(6) The CPU takes each instruction and executes it.

(a) (1) ->(2) ->(3) ->(4) ->(5) ->(6)
(b) (1) ->(3) ->(2) ->(4) ->(5) ->(6)
(c) (1) ->(3) ->(5) ->(4) ->(2) ->(6)
(d) (1) ->(3) ->(2) ->(5) ->(4) ->(6)

Ans. (c)

2. What is the difference between '==' and '=' in C programming ?
(a) They work actually the same.
(b) '=' is used as an assignment while '==' is a comparison operator.
(c) '==' doesn't exist in C.
(d) '==' is used as an assignment while '=' is a comparison operator.

Ans. (b)

3. Which of the following statements about the below C code is CORRECT?

```
#include <stdio.h>
int main(void){

        printf('welcome to c\\!\n');

}
```

(a) We need to 'return 0' at the end to exit the main function. Otherwise, we can't compile and run this program.
(b) ' \' is an escape character in C ,and '\n' is a newline character.
(c) The output will be => Welcome to c!
(d) The void indicates that the main() function will return nothing, and int means that it takes an integer argument.
(e) The main function isn't necessary in C if we have other functions to do the job.

Ans. (b)

4. C includes 3 control structures except_____.
(a) Sequence Structure
(b) Selection Structure
(c) Repetition Structure
(d) Operation Structure

Ans. (d)

5. Which of the following is NOT a C keyword?
(a) void
(b) while
(c) switch
(d) main

Ans. (d)

6. Which of the following statements about C and Python programming is FALSE?
(a) ‘x’ is a valid character in C.
(b) ”hello” is a valid string in C.
(c) str = ‘ Welcome to “Python” ’ is invalid in python.
(d) # is used for comments in Python.

Ans. (c)

7. Which of the following characters is used in printing Horizontal tab in C?
(a) \b
(b) \t
(c) \n
(d) \a

Ans. (b)

8. Which of the following statements about Python programming is FALSE?
(a) ‘raise’ can be used as a variable name
(b) ‘*’ can be used to repeat strings.
(c) ‘+’ can be used to concatenate strings.
(d) function ‘type()’ can be used to know the current type of a variable.

Ans. (a)

9. Which of the following can be considered equivalent to C expression x = a > b? 1:0 ?
(a) if (a > b) {a = 1; b = 0;}
(b) if (x == a) b = 1;
(c) if (a > b) x = 0;
(d) if (a <= b) x = 0; else x = 1;

Ans. (d)

10. Regarding Python variable naming rules, which of the following is INCORRECT?
(A) A variable name can contain numbers but cannot start with a number.
(B) Variable names are case-sensitive.
(C) A variable name can contain spaces to separate words.
(D) A variable name can include underscores (_)

Ans. (c)

11. In Python, which of the following will NOT cause a syntax error?
(A) A variable name starting with a number
(B) Using for as a variable name
(C) Using = instead of == in a conditional statement
(D) Using triple quotes """ or ''' to create a multiline string

Ans. (d)

12. Which of the following statements is FALSE?
(a) All C programs can be written in terms of sequence structure, selection structure, and repetition/iteration structure.
(b) Flowcharts are graphical representations of an algorithm or of a portion of an algorithm.
(c) Algorithms are often represented by Pseudocode in plain English or by Flowchart visually
(d) Specifying actions to be repeated while some conditions remain true is called “Selection Structure”.

Ans. (d)

13. Which of the following logical operators has higher precedence?
(a) &&
(b) !
(c) ||
(d) !=

Ans. (b)

14. Consider the following C expression:

x = a = b > c ? 1 : 0;

What is the execution order of this expression?

(A) b > c is evaluated first, the result is assigned to x, and a is ignored.
(B) b > c is evaluated first, then 1 or 0 is assigned to a, and finally, x receives the value of a.
(C) b > c is evaluated first, then x is assigned first, and then a is set to x.
(D) x is assigned a first, and then b > c is evaluated and affects the value of a.

Ans. (b)

2. [40 pts]

Q1 (20 pts): Write a C program that asks the user to enter a positive integer n, then calculates and prints the sum of all numbers from 1 to n.

```
Example Input:
Enter a positive integer: 5

Example Output:
Sum: 15
```

```c
#include <stdio.h>

int main(void) {
    int n, sum = 0;

    // Prompt the user to enter a positive integer
    printf("Enter a positive integer: ");
    scanf("%d", &n);

    // Calculate the sum from 1 to n using a for loop
    for (int i = 1; i <= n; i++) {
        sum += i;
    }

    // Print the result
    printf("Sum: %d\n", sum);

    return 0;
}
```

Q2 (20 pts): Write a program that takes three integers as input and determines whether they can form a valid triangle. If they can, classify the triangle as equilateral, isosceles, or scalene.

Conditions:
1. A valid triangle must satisfy the triangle inequality theorem: The sum of any two sides must be greater than the third side.
2. Equilateral Triangle: All three sides are equal.
3. Isosceles Triangle: Only two sides are equal.
4. Scalene Triangle: No sides are equal, but it still satisfies the triangle inequality theorem.

Here are some examples:

```
Example Input:
Enter three integers:5 5 5
Example Output:
This is an equilateral triangle.
--------------------------------------------------
Example Input:
Enter three integers:3 4 4
Example Output:
This is an isosceles triangle.
--------------------------------------------------
Example Input:
Enter three integers:3 4 5
Example Output:
This is a scalene triangle.
--------------------------------------------------
Example Input:
Enter three integers:1 2 3
Example Output:
Cannot form a valid triangle.
```

```c
#include <stdio.h>

int main() {
    int a, b, c;

    // Input three sides
    printf("Enter three integers: ");

    scanf("%d %d %d", &a, &b, &c);

    // Check if the inputs form a valid triangle
    if (a + b > c && a + c > b && b + c > a) {

        if (a == b && b == c) {

            printf("This is an equilateral triangle.\n");

        } else if (a == b || a == c || b == c) {

            printf("This is an isosceles triangle.\n");
```

```
        } else {
            printf("This is a scalene triangle.\n");
        }
    } else {
        printf("Cannot form a valid triangle.\n");
    }
    return 0;
}
```