

KATHMANDU UNIVERSITY
End Semester Examination
September 2024

Marks Scored:

Level : B.E./BIT
Year : I

Course : COMP 102
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date

09 SEP 2024

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate answer. Symbols have their usual meanings.

- Which of the following statements is true about the C language and its development?
 - The original C language was designed without support for structured programming and was later enhanced with these features in the C++ language.
 - C was standardized by the International Organization for Standardization (ISO) in 1989, and this version is known as C89 or ANSI C.
 - C was initially developed as a language with garbage collection capabilities, which were later removed in the transition to modern C standards.
 - The C language was developed with a strong emphasis on object-oriented programming, which was later incorporated into the C++ language.
- Which of the following statements about `float` and `double` precision in C is correct?
 - `float` has a precision of approximately 6 decimal digits, while `double` has a precision of about 16 decimal digits
 - `float` **and** `double` both have the same precision but different ranges.
 - `float` and `double` have the same precision, but `double` can store larger numbers.
 - `float` has a precision of approximately 15 decimal digits, while `double` has a precision of about 7 decimal digits.
- Which of the following is not a valid C variable name?
 - 2ndvar
 - int_num
 - _var
 - varName
- What will be following code print?

```
printf("%d", 5 / 2);
```

 - 2.5
 - 2.0
 - 2
 - 5
- What is the output of the following code?

```
int a = 5;
printf("%d", a << 1);
```

 - 10
 - 5
 - 20
 - 2
- Write the output of the following program.

```
#include <stdio.h>
int main() {
    int a = 5;
    int b = 3;
    int c = (a > b) ? (a - b) : (a + b);
    printf("%d\n", c);
    return 0;
}
```

 - 8
 - 15
 - 1
 - 2

09 SEP 2024

18. What will be output of the following code:

```
#include <stdio.h>
int main() {
    int arr[] = {1, 2, 3, 4, 5};
    int *p = arr + 2;
    printf("%d", *(p - 1));
    return 0;
}
```

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

19. Which of the following statements about pointer arithmetic is correct?

- a. Incrementing a pointer moves it to the next byte in memory
- b. Decrementing a pointer moves it to the previous element in memory
- c. Pointers can only be incremented by 1
- d. Pointer arithmetic depends on the data type to which the pointer points

20. What will be the output of the following code?

```
#include <stdio.h>

struct Date {
    int day;
    int month;
    int year;
};

int main() {
    struct Date today = {1, 8, 2024};
    struct Date *ptr = &today;
    ptr->month = 12;
    printf("%d-%d-%d", today.day, today.month, today.year);
    return 0;
}
```

- a. 1-12-2024 b. 1-8-2024 c. 12-1-2024 d. 8-1-2024

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Semester : I

F. M. : 40

SECTION "B"

[6Q. × 4 = 40 marks]

Attempt *ANY SIX* questions.

1. What is identifier? What are the ways to give value to variable? Define constant and write its type. [1+2+1]
2. List different operators with their corresponding associativity in C. What are relational and assignment operators in C? Explain with example. [2+2]
3. Explain about basic structure of C program with example. Write the syntax and example of puts(), scanf(), printf() and putchar() in C. [2+2]
4. Briefly describe different types of functions available in C. Write a program in C to input a number and calculate the sum of individual digits present on that number using recursion. [2+2]
5. Write a C program to input a list of values from user into an array. Pass the list to a function which sorts the values in ascending order. Display the sorted list from main program. [4]
6. Differentiate between **malloc()** and **calloc()** with suitable example. [4]
7. Explain any two storage class used in C. Write a C program to input a 2×2 matrix and display the transpose matrix of that matrix. [2+2]

SECTION "C"

[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8. Write a menu driven program in C which has following options: [3+2+2+1]
 - a. To check whether a number is strong or not.(e.g. 145, 1!+4!+5!=145)
 - b. To check whether a number is prime or composite.
 - c. Display the middle number among three numbers.
 - d. Exit
9. What is **typedef**? Write a program to read structure "collage" having name, estDate and location where estDate is an another structure having day, month and year as members. Display the records of any collages using function. (Number of collages is input by user). [1+7]
10.
 - a. Write down advantages of pointer. Write a program using pointer to swap the values of two variables where the swapping variables by separate function. [1+3]
 - b. Explain about break and continue statement with example. [4]

