

FEC104 – C Programming

Question Paper + Detailed Answer Key with Explanation & Marking Scheme

What is the difference between while and do-while loop? (5 Marks)

ANSWER:

While loop: Condition checked before execution.

Do-while loop: Condition checked after execution.

Do-while runs at least once.

MARKING SCHEME:

- Any 4 differences – 4 marks
- Good explanation – 1 mark

Write a Program to check if the year is a leap year or not. (5 Marks)

ANSWER:

Leap year: divisible by 4 & not by 100 unless divisible by 400.

Sample Code:

```
if((year%4==0 && year%100!=0) || year%400==0) { }
```

MARKING SCHEME:

- Logic – 2 marks
- Conditions – 1 mark
- IO handling – 1 mark
- Syntax – 1 mark

Explain the significance of fread() and fwrite() functions with proper examples. (5 Marks)

ANSWER:

fread(): reads binary block

fwrite(): writes binary block

Both used in file operations.

MARKING SCHEME:

- fread explanation – 2 marks
- fwrite – 2 marks
- Example – 1 mark

What is recursion? Explain with example. (5 Marks)

ANSWER:

Recursion: A function calling itself.

Example: factorial.

MARKING SCHEME:

- Definition – 2 marks
- Example – 3 marks

Differentiate between call by value and call by reference. Write a program to swap two numbers using call by reference. (10 Marks)

ANSWER:

Call by value → copy passed.

Call by reference → address passed.

Swap Program using pointers.

MARKING SCHEME:

- Differences – 4 marks
- Program – 3 marks
- Pointer use – 2 marks
- Output – 1 mark

Read a multi-digit number, reverse it and display sum of digits. Write algorithm & flowchart. (10 Marks)

ANSWER:

Algorithm + Flowchart + Program for reverse & sum.

MARKING SCHEME:

- Algorithm – 3 marks
- Flowchart – 3 marks
- Reverse logic – 2 marks
- Sum logic – 2 marks

(i) Copy contents of one file to another. (ii) Explain file handling functions. (10 Marks)

ANSWER:

(i) File copy program using fgetc/fputc.

(ii) File functions explained.

MARKING SCHEME:

- Program – 5 marks
- Explanation – 5 marks

Program to display addition & multiplication of 3x3 matrices. (10 Marks)

ANSWER:

Matrix addition and multiplication using nested loops.

MARKING SCHEME:

- Loops – 4 marks
- Addition – 2 marks
- Multiplication – 3 marks
- Output – 1 mark

What are pointers? Benefits? Program on pointer addition. (10 Marks)

ANSWER:

Pointer: variable storing address.

Benefits: efficiency, dynamic memory, arrays, etc.

Program on pointer arithmetic.

MARKING SCHEME:

- Definition – 2 marks
- Benefits – 3 marks
- Program – 5 marks

Explain the data types in C with examples. (5 Marks)

ANSWER:

Basic, Derived & User-defined data types.

MARKING SCHEME:

- Full explanation – 5 marks

Explain typedef with example. (5 Marks)

ANSWER:

typedef creates alias for data types.

Example included.

MARKING SCHEME:

- Explanation – 3 marks
- Example – 2 marks

Program to concatenate two strings. (5 Marks)

ANSWER:

String concatenation program using loops.

MARKING SCHEME:

- Logic – 3 marks
- Loop use – 2 marks

Explain pointer to pointer with diagram. (5 Marks)

ANSWER:

Pointer to pointer stores address of another pointer.

Diagram included.

MARKING SCHEME:

- Explanation – 3 marks
- Diagram – 2 marks