5. Control Flow Statements in C

• THEORY EXERCISE: Explain decision-making statements in C (if, else, nested if-else, switch). Provide examples of each.

1. If statement

- Use the if statement to specify a block of code to be executed if a condition is true.

Syntax:

```
if (condition) {
  // block of code
}
```

Example:

```
int x = 20;
int y = 18;
if (x > y) {
  printf("x is greater than y");
}
```

2. Else statement

- The else statement to specify a block of code to be executed if the condition is false.

Syntax:

```
if (condition) {
  // block of code
} else {
  // block of
}
```

Example:

```
int time = 20;
if (time < 18) {
  printf("Good day.");
} else {
  printf("Good evening.");
}
```

3.Nested if statement

- Nested if statements are used in programming to evaluate multiple conditions in a hierarchical manner

Syntax:

```
if (condition1) {
 // code if condition1 is true
} else if (condition2) {
 // code if condition2 is true
} else {
 // code if both conditions are false
}
```

Example:

```
#include <stdio.h>
int main() {
  int num = 70;
  if (num > 0) {
    printf("Number is positive.\n");
    if (num % 2 == 0) {
      printf("Number is even.\n");
    } else {
      printf("Number is odd.\n");
    }
  } else if (num < 0) {
      printf("Number is negative.\n");
  } else {
      printf("Number is zero.\n");
  }
}
```

4.Switch statement

- The **switch** statement is used to execute one block of code among many based on the value of a variable or expression. It is often used as an alternative to multiple **if-else** statements when comparing the same variable against different values.

Syntax:

```
switch (expression) {
  case x:
    // code block
    break;
  case y:
    // code block
    break;
  default:
    // code block
}
```

Example:

```
int day = 4;

switch (day) {
  case 1:
    printf("Monday");
    break;
  case 2:
    printf("Tuesday");
    break;
  case 3:
    printf("Wednesday");
    break;
  case 4:
    printf("Thursday");
    break;
  case 5:
    printf("Friday");
    break;
  case 6:
    printf("Saturday");
    break;
  case 7:
    printf("Sunday");
    break;
}
```