Control statements

```
#include <stdio.h>
int main(){
   int score=80;
   int big=75;
   if(score>big)
      printf("1Score is greater than big\n");
   if(score>big)
   {
      score++;
       printf("2Score is greater than big");

   }
```

1Score is greater than big

2Score is greater than big

```
#include <stdio.h>
int main(){
   int score=80;
   int big=75;
   if(score>big)
      printf("1Score is greater than big\n");
   if(score<big)
   {
      score++;
       printf("2Score is greater than big");

   }
```

1Score is greater than big

Qn.Check whether the number is positive and print(“it’s a positive number”).

```
#include <stdio.h>
int main(){
   int num;
   printf("Enter the number:");
   scanf("%d",&num);
   if(num>0)
      printf("its a positive number\n");
   printf("The program execution is over");

  return 0;
}
```

```
Enter the number:6
its a positive number
The program execution is over
```

Qn2.To check whether the number is even.program will ask for user input.

```
#include <stdio.h>
int main(){
   int num;
   printf("Enter the number:");
   scanf("%d",&num);
   if(num%2==0)
      printf("its an even number\n");
```

```
    printf("The program execution is over");

   return 0;
}
```

```
Enter the number:2
its an even number
The program execution is over

Enter the number:3
The program execution is over
```

Assignments

Qn1.WAP to check for a valid triangle.

```
#include <stdio.h>
int main(){
    int a,b,c;
    printf("Enter the sides of the traingle:\n");
    scanf("%d",&a);
    scanf("%d",&b);
    scanf("%d",&c);
    if((a+b>c)&&(b+c>a)&&(c+a>b))
        printf("This is vailid triangle\n");
    printf("The program execution is over");

   return 0;
}
```

Enter the sides of the traingle:

2

3

4

This is vailid triangle

The program execution is over

Qn2.WAP to check if a character is an alphabet

```
#include <stdio.h>
int main(){
   char chara;
   printf("Enter the character:\n");
   scanf("%c",&chara);
   if(chara>='A'&&chara<='Z'||chara>='a'&&chara<='z')
      printf("This is an alphabet\n");
   printf("The program execution is over");

  return 0;
}
```

Enter the character:

a

This is an alphabet

The program execution is over

Qn3. .WAP to check if a number is divisible by 3

```
#include <stdio.h>
int main(){
   int num;
   printf("Enter the number:");
   scanf("%d",&num);
```

```
    if(num%3==0)
        printf("The number is divissible by 3\n");

    printf("The program execution is over");

   return 0;
}
```

Enter the number:6

The number is divissible by 3

The program execution is over

Qn4. WAP to check if a year is leap year

```
#include <stdio.h>

int main() {
    int year;
    printf("Enter a year: ");
    scanf("%d", &year);

    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
        printf("%d is a leap year.\n", year);
    } else {
        printf("%d is not a leap year.\n", year);
    }

    return 0;
}
```

Enter a year: 2000

2000 is a leap year.

Qn5.WAP to check for Uppercase characters

```
#include <stdio.h>

int main() {
   char ch;
   printf("Enter a character: ");
   scanf("%c", &ch);
   if (ch >= 'A' && ch <= 'Z') {
      printf("%c is an uppercase letter.\n", ch);
   } else {
      printf("%c is not an uppercase letter.\n", ch);
   }

   return 0;
}
```

```
Enter a character: a
a is not an uppercase letter.

Enter a character: S
S is an uppercase letter.
```

Qn6.WAP to check for special character

```
#include <stdio.h>

int main()
{
   char ch;
   printf("Enter any character: ");
```

```
    scanf("%c", &ch);
    if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("'%c' is alphabet.", ch);
    }
    else if(ch >= '0' && ch <= '9')
    {
        printf("'%c' is digit.", ch);
    }
    else
    {
        printf("'%c' is special character.", ch);
    }

    return 0;
}
```

```
Enter any character: @
'@' is special character.
```

Qn.WAP to check whether a number is even or odd

```
#include <stdio.h>
int main(){
    int num;
    printf("Enter the number:");
    scanf("%d",&num);
    int c=num%2;
    if(0==c)
        printf("its an even number\n");
```

```
    else
        printf("its an odd number\n");
    printf("The program execution is over");

   return 0;
}
```

Enter the number:60

its an even number

The program execution is over

Qn.WAP to determine the sign of a value

```
#include <stdio.h>
int main(){
    int num,sign;
    printf("Enter the number:");
    scanf("%d",&num);
    if(num>0){
        sign=+1;
        printf("The number is having a positive sign value\n");
    }
    else if(0==num)
        sign=0;
    else{
        sign=-1;
        printf("The number is having a negative sign value\n");
    }

    printf("The program execution is over");
```

```
  return 0;
}
```

Enter the number:9

The number is having a positive sign value

The program execution is over

Enter the number:-9

The number is having a negative sign value

The program execution is over

Enter the number:0

The program execution is over

Qn.wap for voting eligibility

```
/inputs: age
//Comparison: >=
//Control Statements:  if....else
//How many Variables: 1
//Datatype of the variable: int
//Prferred Scope of the varible: local

#include <stdio.h>
int main(){
   int age;
   printf("Enter your age:");
   scanf("%d",&age);
   if(age>=18){
      printf("You are eligible for voting\n");
   }
```

```
    else{
        printf("You are not eligible for voting!!!\n");
    }

    printf("The program execution is over");

   return 0;
}
```

Enter your age:3

You are not eligible for voting

The program execution is over

Enter your age:19

You are eligible for voting

The program execution is over!!!

Qn.WAP to determine the largest of 3 numbers

```
/inputs: a,b,c
//Comparison: >
//Control Statements:  if,elseif,else
//How many Variables: 3
//Datatype of the variable: int
//Prferred Scope of the varible: local

#include <stdio.h>
int main(){
    int a,b,c;
    printf("Enter the numbers:\n");
    scanf("%d %d %d",&a,&b,&c);
```

```
   if((a>b)&&(a>c)){
      printf("The number %d is the largest\n",a);
   }
   else if((b>a)&&(b>c)){
      printf("The number %d is the largest\n",b);
   }
   else{
       printf("The number%d is the largest\n",c);
   }

   printf("The program execution is over");

  return 0;
}
```

```
Enter the numbers:
1
2
3
The number3 is the largest
The program execution is over
```

Qn.WAP to determine the grade of a student based on following

GRADE A= marks>=90

GRADE B= marks>=80 and marks<90

GRADE C = marks>=70 and marks<80

GRADE D= marks>=60 and marks<70

GRADE F= marks<60

```
/inputs: mark
//Comparison: >=,>,<
//Control Statements:  if,elseif,else
//How many Variables: 1
//Datatype of the variable: int
//Prferred Scope of the varible: local


#include <stdio.h>
int main(){
   int mark;
   printf("Enter the mark:\n");
   scanf("%d",&mark);
   if(mark>0){
   if(mark>=90){
      printf("GRADE A");
   }
   else if((mark>=80)&&(mark<90)){
      printf("GRADE B");
   }
   else if((mark>=70)&&(mark<80)){
      printf("GRADE c");
   }
   else if((mark>=60)&&(mark<70)){
      printf("GRADE D");
   }
   else if(mark<60){
      printf("GRADE F");
   }
   }
```

```
   else{
       printf("Invalid marks");


   }
  return 0;
}
```

```
Enter the mark:
56
GRADE F


Enter the mark:
-9
Invalid marks
```

Qn. WAP to calculate the electricity bill based on the formula mentioned below

Calculations
To calculate your electricity bill, follow these steps:
Watts = (amps) x (volts)

Kilowatt-hours = (watts) x (usage) / 1000.

Cost = (kilowatt-hours) x (electricity rate)

1. Subtract the current meter reading from the previous month's reading to find the energy consumption.

2. Multiply the units consumed by the per-unit charges based on the applicable slabs (e.g., Rs. 4.22 for 1-100 units,
Rs. 5.02 for 101-200 units).

3. Add the fixed charge and energy duty (e.g., Rs. 40 fixed charge and Rs. 0.15 per unit) to the energy charges.

4. The sum of the energy charges, fixed charge, and energy duty gives you the total bill amount.

Example: If you consumed 250 units with the applicable slabs mentioned above, the energy charges would be Rs. 1218.
Adding the fixed charge and energy duty, the total bill amount would be Rs. 1296.

```
#include <stdio.h>

int main() {
    int previous_reading, current_reading;
    float units_consumed, energy_charge = 0.0, energy_duty, fixed_charge = 40.0, energy_duty_rate = 0.15, total_bill;

    printf("Enter previous month's reading: ");
    scanf("%d", &previous_reading);

    printf("Enter current month's reading: ");
    scanf("%d", &current_reading);
```

```
    units_consumed = current_reading - previous_reading;
    if (units_consumed <= 100) {
        energy_charge = units_consumed * 4.22;
    } else if (units_consumed <= 200) {
        energy_charge = (100 * 4.22) + ((units_consumed - 100) * 5.02);
    } else {
        energy_charge = (100 * 4.22) + (100 * 5.02) + ((units_consumed - 200) * 6.05);
    }
    energy_duty = units_consumed * energy_duty_rate;
    total_bill = energy_charge + fixed_charge + energy_duty;
    printf("Total electricity bill: Rs. %.2f\n", total_bill);
    return 0;
}
```

Enter previous month's reading: 500

Enter current month's reading: 700

Total electricity bill: Rs. 994.00

Qn. In this challenge, you are to create a C program that calculates your weekly pay. • The program should ask the user to enter the number of hours worked in a week via the keyboard • The program should display as output the gross pay, the taxes, and the net pay •The following assumptions should be made: • Basic pay rate = $12.00/hr • Overtime (in excess of 40 hours) =

time and a half • Tax rate: • 15% of the first $300 20% of the next $150 •25% of the rest • You will need to utilize if/else statements

```
#include <stdio.h>

int main() {
   float hoursWorked, grossPay, taxes, netPay;
   float hourlyRate = 12.00;
   float overtimeRate = 18.00;
   printf("Enter the number of hours worked in a week: ");
   scanf("%f", &hoursWorked);
   if (hoursWorked > 40) {
      float regularHours = 40;
      float overtimeHours = hoursWorked - regularHours;
      grossPay = (regularHours * hourlyRate) + (overtimeHours * overtimeRate);
   } else {
      grossPay = hoursWorked * hourlyRate;
   }
   if (grossPay <= 300) {
      taxes = grossPay * 0.15;
   } else if (grossPay <= 450) {
      taxes = 300 * 0.15 + (grossPay - 300) * 0.20;
   } else {
      taxes = 300 * 0.15 + 150 * 0.20 + (grossPay - 450) * 0.25;
   }
   netPay = grossPay - taxes;
   printf("\nGross Pay: $%.2f\n", grossPay);
   printf("Taxes: $%.2f\n", taxes);
   printf("Net Pay: $%.2f\n", netPay);

   return 0;
}
```

Enter the number of hours worked in a week: 40

Gross Pay: $480.00
Taxes: $82.50
Net Pay: $397.50

Enter the number of hours worked in a week: 46

Gross Pay: $588.00

Taxes: $109.50
Net Pay: $478.50

Switch Case

```
#include <stdio.h>

int main()
{
   int num ;
   printf("Enter numbers between 1 to 4");
   scanf("%d",&num);
   switch(num){
      case 1:
         printf("1 is entered");
         break;
         case 2:
         printf("2 is entered");
         break;
         case 3:
         printf("3 is entered");
         break;
         case 4:
         printf("4 is entered");
         break;
         default:
         printf("wrong entry");


   }

   return 0;
}
```

Enter numbers between 1 to 4
3
3 is entered

Qn.WAP using switch case for calculator

When you press += Addition of two numbers

When you press -= Subtraction of two numbers

When you press += Multiplication of two numbers

When you press += Divisionof two numbers

When you press %= Modulo operation of two numbers

```
#include <stdio.h>

int main() {
    int num1, num2;
    char op;
    printf("Enter two numbers:\n");
    scanf("%d", &num1);
    scanf("%d", &num2);
    printf("Enter the operator (+, -, *, /, %%):\n");
    scanf(" %c", &op);
    switch (op) {
        case '+':
            printf("Addition of two numbers is %d\n", (num1 + num2));
            break;

        case '-':
            printf("Subtraction of two numbers is %d\n", (num1 - num2));
            break;

        case '*':
            printf("Multiplication of two numbers is %d\n", (num1 * num2));
            break;

        case '/':
            if (num2 != 0) {
```

```
            printf("Division of two numbers is %d\n", (num1 / num2));
        } else {
            printf("Error! Division by zero.\n");
        }
        break;

    case '%':
        if (num2 != 0) {
            printf("Modulo operation of two numbers is %d\n", (num1 % num2));
        } else {
            printf("Error! Modulo by zero.\n");
        }
        break;

    default:
        printf("Invalid operator entered.\n");
        break;
  }

  return 0;
}
```

```
Enter two numbers:
4
2
Enter the operator (+, -, *, /, %):
+
Addition of two numbers is 6
```

LOOPING

Qn.WAP to print the values between 1 to 10 using while loop

```
#include <stdio.h>

int main() {
   int i=1;
   while(i<=10){
   Printf("%d",i);
   i++;}
   return 0;
}
```

```
1
2
3
4
5
6
7
8
9
10
```

Qn.WAP to calculate the sum of natural numbers

```
#include <stdio.h>

int main() {
   int i=1,sum=0,num;
   printf("Enter the natural number for summation:\n");
   scanf("%d \n",&num);
   while(i<=num){
      sum=sum+i;
     i=i+1;
```

```
    }
    printf("%d",sum);
    return 0;
}
```

Enter the natural number for summation:20

210

Qn.WAP to print even numbers upto a given number

```
#include <stdio.h>

int main()
{
    int n,i=2;
    printf("Enter a number");
    scanf("%d",&n);
    while(i<=n)
    {
        printf("%d ->",i);
        i+=2;
    }

    return 0;
}
```

Enter a number20

2 ->4 ->6 ->8 ->10 ->12 ->14 ->16 ->18 ->20 ->

Qn.WAP to reverse a number

```
#include <stdio.h>
```

```
int main() {
    int num, reversed = 0, remainder;
    printf("Enter a number: ");
    scanf("%d", &num);
    while (num != 0) {
        remainder = num % 10;
        reversed = reversed * 10 + remainder;
        num /= 10;
    }
    printf("Reversed number: %d\n", reversed);

    return 0;
}
```

```
Enter a number: 123
Reversed number: 321
```

Qn.WAP to count the number of digits in a number using while loop

```
#include <stdio.h>

int main() {
    int num, count = 0, remainder;
    printf("Enter a number: ");
    scanf("%d", &num);
    while (num != 0) {
        remainder = num % 10;
        num /= 10;
        count++;
    }
```

```
    printf("The number of digits in a number is: %d\n", count);

    return 0;
}
```

```
Enter a number: 123
The number of digits in a number is: 3
```

Assignment with respect to while loop

1. WAP to print Fibonacci Series up to a Given Number.

```
#include <stdio.h>

int main() {
    int limit, first = 0, second = 1, next;
    printf("Enter the limit for Fibonacci series: ");
    scanf("%d", &limit);
    printf("Fibonacci Series up to %d: ", limit);
    if (limit >= 0) {
        printf("%d ", first);
    }
    if (limit >= 1) {
        printf("%d ", second);
    }
```

```
    next = first + second;
    while (next <= limit) {
        printf("%d ", next);
        first = second;
        second = next;
        next = first + second;
    }
    printf("\n");
    return 0;
}
```

```
Enter the limit for Fibonacci series: 10
Fibonacci Series up to 10: 0 1 1 2 3 5 8
```

2. WAP to print factorial of a number.

```
 #include <stdio.h>
int main() {
    int num;
    long long factorial = 1;
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num < 0) {
        printf("Factorial is not defined for negative numbers.\n");
    } else {
        int i = 1;
```

```
        while (i <= num) {
            factorial *= i;
            i++;
        }
        printf("Factorial of %d is %lld\n", num, factorial);
    }
    return 0;
}
```

```
Enter a number: 5
Factorial of 5 is 120
```

3. WAP to check whether the number is Prime or not.

```
#include <stdio.h>
int main() {
    int num, i = 2;
    int is_prime = 1;
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num <= 1) {
        is_prime = 0;
    }
```

```
    while (i <= num / 2) {
        if (num % i == 0) {
            is_prime = 0;
            break;
        }
        i++;
    }
    if (is_prime) {
        printf("%d is a prime number.\n", num);
    } else {
        printf("%d is not a prime number.\n", num);
    }

    return 0;
}
```

```
Enter a number: 7
7 is a prime number.
Enter a number: 8
8 is not a prime number.
```

4. WAP to print lower case alphabets.

```
#include <stdio.h>


int main() {
    char ch = 'a';
    while (ch <= 'z') {
        printf("%c ", ch);
        ch++;
    }
    printf("\n");
    return 0;
}
```

```
a b c d e f g h i j k l m n o p q r s t u v w x y z
```