1. Write a program to check if a number is positive, negative, or zero.

IPO:

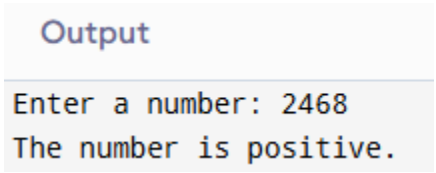
Input:Enter a value as an input.
Process:check whether the number is positive or negative.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);
    if (number > 0)
    {
        printf("The number is positive.\n");
    } else if (number < 0) {
        printf("The number is negative.\n");
    }
    else
    {
        printf("The number is zero.\n");
    }

    return 0;
}
```

Output:



2. Write a program to find the largest among three numbers.

IPO:

Input:Enter a value as an input.
Process:to find the largest among three numbers.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
   int num1, num2, num3, largest;
   printf("Enter three numbers: ");
   scanf("%d %d %d", &num1, &num2, &num3);
   largest = num1;
   if (num2 > largest)
   {
      largest = num2;
   }
   if (num3 > largest)
   {
      largest = num3;
   }
   printf("The largest number is %d\n", largest);
   return 0;
}
```

Output:

```
Output

Enter three numbers:
7
10
11
The largest number is 11
```

3. Write a program to check if a year is a leap year.

IPO:

Input:Enter a value as an input.
Process:To check if a year is a leap year.
Output:output the variable.

Program:

```
 #include <stdio.h>
int main()
{
   int a;
   printf("Enter a year: ");
   scanf("%d", &a);
   if ((a % 400 == 0) || (a% 4 == 0 && a % 100 != 0))
   {
      printf("%d is a leap year.\n", a);
   }
   else
   {
      printf("%d is not a leap year.\n", a);
   }
   return 0;
}
```

Output:

```
Output

Enter a year: 1900
1900 is not a leap year.
```

4. Write a program to check whether a character is a vowel or consonant.

IPO:

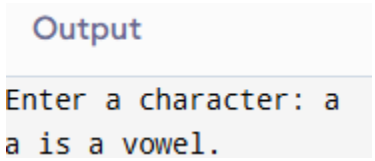
Input:Enter a value as an input.
Process: To check whether a character is a vowel or consonant.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
    char a;
    printf("Enter a character: ");
    scanf("%c", &a);
    if (a == 'a' || a == 'e' || a == 'i' || a == 'o' || a == 'u') {
        printf("%c is a vowel.\n", a);
    }
    else if ((a >= 'a' && a <= 'z'))
    {
        printf("%c is a consonant.\n", a);
    }
    else
    {
        printf("%c is not an alphabet.\n", a);
    }

    return 0;
}
```

Output:



5. Write a program to assign grades based on marks.

IPO:

Input:Enter a value as an input.
Process: To assign grades based on marks.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
    int marks;
    printf("Enter your marks (0 - 100): ");
```

```
    scanf("%d", &marks);
    if (marks < 0 || marks > 100)
    {
        printf("Invalid marks entered.\n");
    }
    else if (marks >= 90)
    {
        printf("Grade: A\n");
    }
    else if (marks >= 70)
    {
        printf("Grade: B\n");
    }
    else if (marks >= 50)
    {
        printf("Grade: C\n");
    }
    else if (marks >= 40)
    {
        printf("Grade: D\n");
    }
    else
    {
        printf("Grade: F (Fail)\n");
    }
    return 0;
}
```

Output:

```
Output

Enter your marks (0 - 100): 99
Grade: A
```

6. Write a program to check whether a number is divisible by 5 and 11.

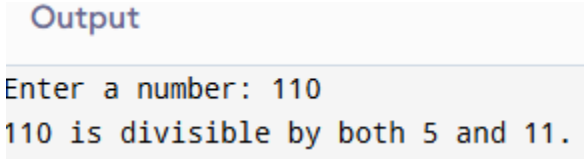
IPO:

Input:Enter a value as an input.
Process: To check whether a number is divisible by 5 and 11.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
   int number;
   printf("Enter a number: ");
   scanf("%d", &number);
   if (number % 5 == 0 && number % 11 == 0)
   {
      printf("%d is divisible by both 5 and 11.\n", number);
   }
   else
   {
      printf("%d is not divisible by both 5 and 11.\n", number);
   }
   return 0;
}
```

Output:



7. Write a program to find the absolute value of a number.

IPO:

Input:Enter a value as an input.
Process: To find the absolute value of a number.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
{
   int number, absValue;
   printf("Enter a number: ");
   scanf("%d", &number);
   if (number < 0)
   {
      absValue = -number;
   }
   else
```

```
    {
        absValue = number;
    }
    printf("The absolute value of %d is %d\n", number, absValue);
    return 0;
}
```

Output:

```
Output

Enter a number: -5
The absolute value of -5 is 5
```

8. Write a menu-driven program to perform +, -, *, / operations.

IPO:

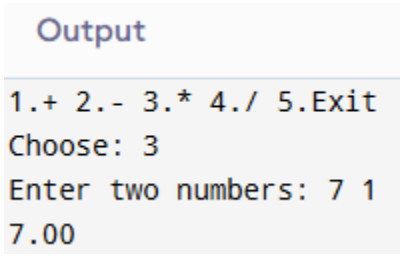
Input:Enter a value as an input.
Process:Imenu-driven program to perform +, -, *, / operations.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
 {
    int ch;
    double a, b;
    while (1)
 {
        printf("1.+ 2.- 3.* 4./ 5.Exit\nChoose: ");
        scanf("%d", &ch);
        if (ch == 5) break;
        if (ch < 1 || ch > 5) { printf("Invalid!\n"); continue;
}
        printf("Enter two numbers: ");
        scanf("%lf %lf", &a, &b);
        if (ch == 1) printf("%.2lf\n", a + b);
{
        else if (ch == 2) printf("%.2lf\n", a - b);
        else if (ch == 3) printf("%.2lf\n", a * b);
        else if (ch == 4)
{
            if (b == 0) printf("Divide by zero error\n");
            else printf("%.2lf\n", a / b);
        }
```

```
    }
    return 0;
}
```

Output:



9. Write a program to find roots of a quadratic equation.

IPO:

Input:Enter a value as an input.
Process: to find roots of a quadratic equation.
Output:output the variable.

Program:

```
#include <stdio.h>
#include <math.h>
int main()
{
    float a, b, c;
    float discriminant, root1, root2;
    printf("Enter coefficients a, b and c: ");
    scanf("%f %f %f", &a, &b, &c);
    discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("Roots are real and distinct: %.2f and %.2f\n", root1, root2);
    } else if (discriminant == 0) {
        root1 = root2 = -b / (2 * a);
        printf("Roots are real and equal: %.2f\n", root1);
    } else {
        float realPart = -b / (2 * a);
        float imagPart = sqrt(-discriminant) / (2 * a);
        printf("Roots are complex: %.2f + %.2fi and %.2f - %.2fi\n", realPart, imagPart, realPart,
imagPart);
    }
```

```
    return 0;
}
```

Output:

```
Output

Enter coefficients a, b and c: 22 33 11
Roots are real and distinct: -0.50 and -1.00
```

10. Write a program to find the number of digits in a number.

IPO:

Input:Enter a value as an input.
Process:To find the number of digits in a number.
Output:output the variable.

Program:

```
#include <stdio.h>
int main()
 {
    int n, count = 0;
    scanf("%d", &n);
    if (n == 0) count = 1;
    else {
        if (n < 0) n = -n;
        while (n) {
            n /= 10;
            count++;
        }
    }

    printf("Digits: %d\n", count);
    return 0;
}
```

Output:

```
222
Digits: 3
```