1. Write a program that declares an integer variable, initializes it with a value of 42 and prints the value on console.

```
#include<stdio.h>
int main()
{
    int a=42;
    printf("Value of a is %d \n",a);
    return 0;
}
```

Output

Value of a is 42

---

2. Create a program that swaps the values of two integer variables without using a temporary variable. Demonstrate that by printing the values before and after the swap.

```
#include<stdio.h>
int main()
{
    int a=50,b=100;
    printf("Values of a and b before swapping: %d %d \n",a,b);
    a=a+b;
    b=a-b;
    a=a-b;
    printf("Values of a and b after swapping: %d %d",a,b);
}
```

Output

Values of a and b before swapping: 50 100
Values of a and b after swapping: 100 50

---

3. Write a program that prompts the user to enter their name and age, stores these values in appropriate variables, and then prints a greeting message that includes both the name and age.

```
#include<stdio.h>
int main()
{
    char name[10];
    int age;
    printf("Enter your name \n");
    gets(name);
```

```
    printf("Enter your age \n");
    scanf("%d",&age);
    printf("Greetings %s (%d)",name,age);
    return 0;
}
```

Output

Enter your name
Vivek
Enter your age
22
Greetings Vivek (22)

4.Write a program that declares an integer variable, assigns it to a value of 10, and then converts it to a float variable. Print both the integer and float values to show the conversion.

```
#include<stdio.h>
int main()
{
    int a=10;
    printf("The integer and float value of a is %d and %f \n",a,(float)a);
    return 0;
}
```

Output

The integer and float value of a is 10 and 10.000000

---

5. Using #define, create a constant for the value of pi (3.14). Write a program that calculates the area of the circle given the radius and prints the result using the constant for pi.

```
#include<stdio.h>
#define pi 3.14
int main()
{
    int rad;
    float area;
    printf("Enter the radius of the circle \n");
    scanf("%d",&rad);
    area=pi*rad*rad;
    printf("the area of the circle is %f \n",area);
```

```
    return 0;
}
```

Output

Enter the radius of the circle
5
the area of the circle is 78.500000

---

6. Write a program that demonstrates the concept of variable scope by declaring a global variable and modifying it within a function. Print the value of the global variable before and after modification.

```
#include<stdio.h>
int a=20;
void func()
{
    a+=10;
    printf("The value of a is %d \n",a);
}
int main()
{
    a+=10;
    printf("The value of a is %d \n",a);
    func();
    return 0;
}
```

Output

The value of a is 30
The value of a is 40

---

7. Write a program that uses augmented assignment operators (+=,-=,*=,/=) to perform calculations on an integer variable initialized to 100. Print the value after each operation.

```
#include<stdio.h>
int main()
{
    int a=100;
    printf("Value of a after addition: %d \n",a+=5);
    printf("Value of a after subtraction: %d \n",a-=5);
```

```
    printf("Value of a after multiplication: %d \n",a*=5);
    printf("Value of a after division: %d",a/=5);
}
```

Output

Value of a after addition: 105
Value of a after subtraction: 100
Value of a after multiplication: 500
Value of a after division: 100

---

8. Create an array of integers with five elements. Initialize it with values of your choice, then write a program to calculate and print the sum of all elements in the array.

```
#include<stdio.h>
int main()
{
    int arr[5]={10,20,30,40,50},sum=0;
    for(int i=0;i<5;i++)
    {
        sum=sum+arr[i];
    }
    printf("Sum of elements of array: %d",sum);
}
```

Output

Sum of elements of array: 150

---

9. Create a C program that prompts the user for a username and password, then checks of the entered credentials match predefined values. Use logical operators to determine if the authentication is successful.

```
#include<stdio.h>
#include<string.h>
int main()
{
    char username1[5]="Quest";
    char password1[6]="Global";
    char username[5],password[6];
    printf("Enter the username \n");
```

```
18.     gets(username);
19.     printf("Enter the password \n");
20.     gets(password);
21.     printf("%d",strlen(password));
22.     if(strlen(password)==0 || strlen(username)==0)
23.         printf("Enter valid username or password \n");
24.     else if (strcmp(username1,username)!=0 &&
    strcmp(password1,password)!=0)
25.         printf("Success");
26.     else
27.         printf("Error");
28.
29. }
```

Output

Enter the username
Quest
Enter the password
Global
Success