ASSIGNMENT 2

1. Variable Initialization

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

```
#include <stdio.h>

int main()

{

  int a;

  a=42;

  printf("a=%d\n",a);

  return 0;

}
```

OUTPUT

```
 a=42
```

2. Swapping Variables

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

```
#include <stdio.h>



int main()

{

   int a=10;

   int b=20;

   printf("Before Swapping\n");

   printf("a=%d\n",a);

   printf("b=%d\n",b);

    printf("After Swapping\n");

   printf("a=%d\n",b);
   printf("b=%d\n",a);
   return 0;
}
```

OUTPUT

```
Before Swapping
a=10
b=20
After Swapping
a=20
b=10
```

3. User Input and Output

Question: 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[20];
  int age;
  printf("Enter the name \n");
  scanf("%s",name);
   printf("Enter the age \n");
  scanf("%d",&age);

  printf("Hai %s and age is %d",name,age);

   return 0;
}
```

```
OUTPUT

Enter the name

MEGHA

Enter the age

23

Hai MEGHA and age is 23.
```

4. Data Type Conversion

Question: Write a program that declares an integer variable, assigns it 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 i =10;

 float f=(float)i;

 printf("i=%d\n",i);

  printf("f=%f\n",f);

   return 0;

}
```

```
OUTPUT

i=10

f=10.000000
```

5. Constants vs. Variables

Question: Using #define, create a constant for the value of Pi (3.14). Write a program that calculates the area of a circle given its radius (stored in a variable) and prints the result using the constant for Pi.

```
#include <stdio.h>


#define PI 3.14


int main() {
   float radius;
   float area;
   printf("Enter the radius of the circle");
   scanf("%f", &radius);
   area = PI * radius * radius;
   printf("The area of the circle is: %f\n", area);
   return 0;
}
```

OUTPUT

```
Enter the radius of the circle16
The area of the circle is: 803.840027
```

6. Scope of Variables

Question: 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 globalVar = 10;


void modifyGlobalVar() {
   globalVar = 20;
}
```

```
int main() {
    printf("Before modification, globalVar = %d\n", globalVar);

    modifyGlobalVar();

    printf("After modification, globalVar = %d\n", globalVar);

    return 0;
}
```

OUTPUT

```
Before modification, globalVar = 10
After modification, globalVar = 20
```

8. Using Augmented Assignment Operators

Question: 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 num = 100;
    num += 20;
    printf("+= operation, num = %d\n", num);
    num -= 10;
    printf("-= operation, num = %d\n", num);
    num *= 2;
    printf("*= operation, num = %d\n", num);
    num /= 4;
    printf("/= operation, num = %d\n", num);
```

```
   return 0;

}
```

OUTPUT

```
 += operation, num = 120

 -= operation, num = 110

*= operation, num = 220

 /= operation, num = 55
```

9. Array of Variables

Question: 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};

   int sum = arr[0] + arr[1] + arr[2] + arr[3] + arr[4];

   printf("The sum of the elements in the array is: %d\n", sum);

   return 0;

}
```

OUTPUT

```
The sum of the elements in the array is: 150
```

10.User Authentication Program

Objective

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

Requirements

Define two constants for the correct username and password.

Prompt the user to enter their username and password.

Use logical operators (&&, ||, !) to check if:

If both are correct, display a success message.
Implement additional checks:
If the username is empty, display a message indicating that the username cannot be empty.
If the password is empty, display a message indicating that the password cannot be empty.
The username matches the predefined username AND the password matches the predefined password.
If either the username or password is incorrect, display an appropriate error message.

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


int main()
{
    char username[20];
    char password[10];



    printf("Enter the username: ");
    scanf("%s", username);



    printf("Enter the password: ");
    scanf("%s", password);



    if (strlen(username) == 0) {
        printf("Username cannot be empty\n");
    }
    else if (strlen(password) == 0) {
        printf("Password cannot be empty\n");
    }

    else if (strcmp(username, "megha") == 0 && strcmp(password, "aswathy") == 0) {
        printf("Successfully completed\n");
    }

    else {
        printf("Invalid username or password\n");
    }

    return 0;
}
```

OUTPUT

```
Enter the username: megha
Enter the password: aswathy
Successfully completed
```

11.Find the Output of Code

```
#include <stdio.h>

int main()
{
  int x=2;
  int y=++x + x++ + --x;
  printf("value of y =%d",y);
  return 0;
}
```

OUTPUT

```
value of y =10
```

12.Find the Output of the Programming Code

```
12(a). #include <stdio.h>

int main()
{
 int a=40,b=30;
 int y=a&b;
 printf("y =%d",y);



  return 0;
}
```

OUTPUT

```
y =8
```

```
12.(b). #include <stdio.h>

int main()
{
  int a=40,b=30;
  int y=a&&b;
  printf("y =%d",y);


   return 0;
}
```

OUTPUT

```
y=1
```

13.To check whether the number is even or odd.

```
#include <stdio.h>

int main()
{
    int a;


    printf("enter a value");
    scanf("%d",&a);
    if(a&1)
    {
        printf("the number is odd");
    }else{
        printf("number is even");
    }

    return 0;
}
```

OUTPUT

```
enter a value25

the number is odd

enter a value480

number is even
```

14.Find the output of programming code

```
#include <stdio.h>

int main()

{

  char a='g';

  printf("a=%c\n",a);

  printf("a=%d",a);


   return 0;

}
```

OUTPUT

```
a=g

a=103
```

15.signed and unsigned

```
#include<stdio.h>

int main()

{

   int a=40;

   printf("001a=%d\n",a);

    a= -50;

   printf("002a=%d\n",a);
```

```
  return 0;
}
```

OUTPUT

```
001a=40
002a=-50
```

```
16.#include<stdio.h>
int main()
{
  unsigned int a=40;
  printf("001a=%d\n",a);
   a= -50;
  printf("002a=%d\n",a);
  return 0;
}
```

OUTPUT

```
001a=40
002a=-50
```

17.OPERATORS

```
#include<stdio.h>
int main(){
 int a=40;
 int b=24;
printf("addition of A+B=%d\n",a+b);
printf("subtraction of A-B=%d\n",a-b);
printf("multiplication of A*B=%d\n",a*b);
printf("division of A/B=%d\n",a/b);
return 0;
}
```

OUTPUT

```
addition of A+B=64

subtraction of A-B=16

multiplication of A*B=960

division of A/B=1
```