PROBLEM1: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.

Programme

#include <stdio.h>

int main(){

int a=42;

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

return 0;

}

Output

Value of a=42

PROBLEM2: 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.

Programme

#include <stdio.h>

int main(){

int a=10;

int b=20;

printf("The values before swapping\n");

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

a=a+b; //30

b=a-b; //10

a=a-b; //20

printf("The values after swapping");

printf("The values before swapping\n");

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

}

Output

The values before swapping

a=10

b=20

The values after swappingThe values before swapping

a=20

b=10

PROBLEM3: 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.

Programme

#include <stdio.h>

int main(){

int age;

char name[40];

printf("Enter your name\n");

scanf("%s",name);

printf("Enter your age\n");

scanf("%d",&age);

printf("Hello %s you are %d years old!!",name,age);

}

Output

Enter your name

Amritha

Enter your age

22

Hello Amritha you are 22 years old!!

PROBLEM4: 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.

Programme

#include <stdio.h>

int main(){

int a=10;

float a\_float;

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

a\_float=(float)a;

printf("Float Value of a=%f",a\_float);

}

Output

Integer Value of a=10

Float Value of a=10.000000

PROBLEM5: 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.

Programme

#include <stdio.h>

#define pi 3.14

int main(){

float r,area;

printf("Enter the radius of the circle\n");

scanf("%f",&r);

area=(pi\*r\*r);

printf("The area of the circle with radius %.2f is\n %.2f",r,area);

return 0;

}

Output

Enter the radius of the circle

5

The area of the circle with radius 5.00 is

78.50

PROBLEM6: 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.

Programme

#include <stdio.h>

int global\_variable=50;

void modifying\_function(){

global\_variable=100;

printf("value of global\_variable in inside the function=%d\n",global\_variable);

}

int main(){

printf("value of global\_variable before modification= %d\n",global\_variable);

modifying\_function();

printf("value of global\_variable after calling modifying\_function= %d",global\_variable);

return 0;

}

Output

value of global\_variable before modification= 50

value of global\_variable in inside the function=100

value of global\_variable after calling modifying\_function= 100

PROBLEM7: 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.

Programme

#include <stdio.h>

int main(){

int value=100;

value += 10;

printf("After += 10: %d\n", value);

value -= 20;

printf("After -= 20: %d\n", value);

value \*= 3;

printf("After \*= 3: %d\n", value);

value /= 2;

printf("After /= 2: %d\n", value);

return 0;

}

Output

After += 10: 110

After -= 20: 90

After \*= 3: 270

After /= 2: 135

PROBLEM8: 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.

Programme

#include <stdio.h>

int main(){

int arr[5]={1,2,3,4,5};

int sum=0,i;

printf("The array is:\n[");

for(i=0;i<5;i++){

printf("%d,",arr[i]);

sum=sum+arr[i];

}

printf("]\nThe sum of array elements=%d",sum);

}

Output

The array is:

[1,2,3,4,5,]

The sum of array elements=15

Problem9: 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.

Programme

#include <stdio.h>

#include <string.h>

#define USERNAME "Amritha"

#define PASSWORD "Amritha123"

int main() {

char username[50];

char password[50];

printf("Enter username: ");

scanf("%s",username);

printf("Enter password: ");

scanf("%s",password);

if (strlen(username) == 0) {

printf("Error: Username cannot be empty.\n");

} else if (strlen(password) == 0) {

printf("Error: Password cannot be empty.\n");

} else {

if (strcmp(username,USERNAME) == 0 && strcmp(password,PASSWORD) == 0) {

printf("Authentication successful!\n");

} else {

if (strcmp(username, USERNAME) != 0) {

printf("Error: Incorrect username.\n");

}

if (strcmp(password, PASSWORD) != 0) {

printf("Error: Incorrect password.\n");

}

}

}

return 0;

}

Output

Enter username: Amritha

Enter password: Amritha123

Authentication successful!

Enter username: amrithha

Enter password: Amritha123

Error: Incorrect username.

Enter username: Amritha

Enter password: amritha123

Error: Incorrect password.

Enter username: amritha

Enter password: amrit123

Error: Incorrect username.

Error: Incorrect password.