Structured Programming Language (Lab)

Lecture – 02

Program to Display "Hello, World!"

```c
#include <stdio.h>
int main() {
   // printf() displays the string inside quotation
   printf("Hello, World!");
   return 0;
}
```

Output

```
Hello, World!
```

Program to Print an Integer given by user.

```c
#include <stdio.h>
int main() {
    int number;

    printf("Enter an integer: ");

    // reads and stores input
    scanf("%d", &number);

    // displays output
    printf("You entered: %d", number);

    return 0;
}
```

Output

```
Enter an integer: 25
You entered: 25
```

C Program to Add Two Integer

```c
#include <stdio.h>
int main() {

    int number1, number2, sum;

    printf("Enter two integers: ");
    scanf("%d %d", &number1, &number2);

    // calculating sum
    sum = number1 + number2;

    printf("%d + %d = %d", number1, number2, sum);
    return 0;
}
```

Output

```
Enter two integers: 12
11
12 + 11 = 23
```

C Program to Multiply Two Floating-Point Numbers

```c
#include <stdio.h>
int main() {
    double a, b, product;
    printf("Enter two numbers: ");
    scanf("%lf %lf", &a, &b);

    // Calculating product
    product = a * b;

    // %.2lf displays number up to 2 decimal point
    printf("Product = %.2lf", product);
```

```
    return 0;
}
```

Output

```
Enter two numbers: 2.4
1.12
Product = 2.69
```

C Program to Find ASCII Value of a Character

```
#include <stdio.h>
int main() {
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);

    // %d displays the integer value of a character
    // %c displays the actual character
    printf("ASCII value of %c = %d", c, c);

    return 0;
}
```

Output

```
Enter a character: G
ASCII value of G = 71
```

C Program to Compute Quotient and Remainder

```
#include <stdio.h>
int main() {
    int dividend, divisor, quotient, remainder;
    printf("Enter dividend: ");
    scanf("%d", &dividend);
    printf("Enter divisor: ");
    scanf("%d", &divisor);
```

```
    // Computes quotient
    quotient = dividend / divisor;

    // Computes remainder
    remainder = dividend % divisor;

    printf("Quotient = %d\n", quotient);
    printf("Remainder = %d", remainder);
    return 0;
}
```

Output

```
Enter dividend: 25
Enter divisor: 4
Quotient = 6
Remainder = 1
```

C Program to Find the Size of int, float, double and char

```
#include<stdio.h>
int main() {
    int intType;
    float floatType;
    double doubleType;
    char charType;

    // sizeof evaluates the size of a variable
    printf("Size of int: %zu bytes\n", sizeof(intType));
    printf("Size of float: %zu bytes\n", sizeof(floatType));
    printf("Size of double: %zu bytes\n", sizeof(doubleType));
    printf("Size of char: %zu byte\n", sizeof(charType));

    return 0;
}
```

Output

```
Size of int: 4 bytes
Size of float: 4 bytes
Size of double: 8 bytes
Size of char: 1 byte
```

Program Using the long keyword

```c
#include <stdio.h>
int main() {
    int a;
    long b;   // equivalent to long int b;
    long long c;  // equivalent to long long int c;
    double e;
    long double f;

    printf("Size of int = %zu bytes \n", sizeof(a));
    printf("Size of long int = %zu bytes\n", sizeof(b));
    printf("Size of long long int = %zu bytes\n", sizeof(c));
    printf("Size of double = %zu bytes\n", sizeof(e));
    printf("Size of long double = %zu bytes\n", sizeof(f));

    return 0;
}
```

Output

```
Size of int = 4 bytes
Size of long int = 8 bytes
Size of long long int = 8 bytes
Size of double = 8 bytes
Size of long double = 16 bytes
```

Swap Numbers Using Temporary Variable

```c
#include<stdio.h>
int main() {
  double first, second, temp;
  printf("Enter first number: ");
```

```
  scanf("%lf", &first);
  printf("Enter second number: ");
  scanf("%lf", &second);

  // value of first is assigned to temp
  temp = first;

  // value of second is assigned to first
  first = second;

  // value of temp (initial value of first) is assigned to second
  second = temp;

  // %.2lf displays number up to 2 decimal points
  printf("\nAfter swapping, first number = %.2lf\n", first);
  printf("After swapping, second number = %.2lf", second);
  return 0;
}
```

Output

```
Enter first number: 1.20
Enter second number: 2.45

After swapping, first number = 2.45
After swapping, second number = 1.20
```

Program to Check Even or Odd

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

    // true if num is perfectly divisible by 2
    if(num % 2 == 0)
        printf("%d is even.", num);
    else
        printf("%d is odd.", num);

    return 0;
```

```
}
```

Output

```
Enter an integer: -7
-7 is odd.
```

Program to Check Vowel or consonant

```c
#include <stdio.h>
int main() {
    char c;
    int lowercase_vowel, uppercase_vowel;
    printf("Enter an alphabet: ");
    scanf("%c", &c);

    // evaluates to 1 if variable c is a lowercase vowel
    lowercase_vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');

    // evaluates to 1 if variable c is a uppercase vowel
    uppercase_vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');

    // evaluates to 1 (true) if c is a vowel
    if (lowercase_vowel || uppercase_vowel)
        printf("%c is a vowel.", c);
    else
        printf("%c is a consonant.", c);
    return 0;
}
```

Output

```
Enter an alphabet: G
G is a consonant.
```