Topics Today

1. Data Types, Variables

2. Basic Input/ Output

3. Operators and Expressions

4. ASCII character set

Lab Problems:

Problem 1

Write a program to declare and initialize different data types in C (`int`, `float`, `char`, `double`) and print their values.

Sample Output:

```
Integer: 10
Float: 3.14
Character: A
Double: 9.8765
```

Problem 2

Write a program to take an integer, a floating-point number, and a character as input from the user and print them.

Sample Input:

```
5
3.75
Z
```

Sample Output:

```
Integer: 5
Float: 3.75
Character: Z
```

Problem 3

Write a program that takes a character as input and prints its ASCII value.

Sample Input:

```
A
```

Sample Output:

```
ASCII value of A: 65
```

Problem 4

Write a program that takes a lowercase alphabet as input and convert into its uppercase.

Sample Input:

```
q
```

Sample Output:

```
Q
```

Problem 5

Write a program that takes two integer inputs and performs the following operations: addition, subtraction, multiplication, division, and modulus. Print the results.

Sample Input:

```
8 3
```

Sample Output:

```
Addition: 11
Subtraction: 5
Multiplication: 24
Division: 2
Modulus: 2
```

Problem 6

Write a program to input a 4-digit number and reverse it. (Use modulus % and division / operators).

Sample Input:

```
1234
```

Sample Output:

```
Reversed Number: 4321
```

Problem 7

Write a program that takes two integer values as input and swaps their values using an additional variable. Print the values before and after swapping.

Sample Input:

```
5 10
```

Sample Output:

```
Before Swap: a = 5, b = 10
After Swap: a = 10, b = 5
```

Problem 8

Write a program that takes two integer values as input and swaps their values without using an additional variable. Print the values before and after swapping.

Sample Input:

```
7 3
```

Sample Output:

```
Before Swap: a = 7, b = 3
After Swap: a = 3, b = 7
```

Problem 9

Write a program that calculates the time difference between Dhaka (11:20 AM) and Mumbai (10:50 AM). Display the time difference in hours and minutes.

Sample Output:

```
Time Difference: 0 hours 30 minutes
```

Problem 10

Write a C program to take temperature in Celsius as input and convert into Fahrenheit.

Formula: $F = (C \times 9/5) + 32$.