

## Day 3: Loops and Iterations (5-8-2025)

1. Write a program to print numbers from 1 to 100.

# IPO

INPUT: print the even numbers from 1 to 50

PROCESS: Use a loop to print numbers from 1 to 100

OUTPUT: Numbers from 1 to 100

CODE:

```
#include<stdio.h>

void main()
{
    int i;
    for(i = 1; i <= 100; i++)
    {
        printf("%d ", i);
    }
}
```

OUTPUT:

Output Clear

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35  
36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66  
67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97  
98 99 100

2. Write a program to print even numbers from 1 to 50.

IPO

INPUT: print the even numbers from 1 to 50

PROCESS: Use loop and check if number is even

OUTPUT: Even numbers from 1 to 50

CODE:

```
#include<stdio.h>
void main()
{
    int i;
    for(i = 1; i <= 50; i++)
    {
        if(i % 2 == 0)
            printf("%d ", i);
    }
}
```

OUTPUT:

Output

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

3. Write a program to find the factorial of a number.

IPO

INPUT: A number (n)

PROCESS: Multiply numbers from 1 to n

OUTPUT: Factorial of the number

CODE:

```
#include<stdio.h>

void main()

{
    int n, i,fact = 1;

    scanf("%d", &n);

    for(i = 1; i <= n; i++)

        fact *= i;

    printf("Factorial = %d", fact);
}
```

OUTPUT:

Output
5 Factorial = 120

4. Write a program to calculate the sum of digits of a number.

IPO

INPUT: A number (num)

PROCESS: Extract digits and add them

OUTPUT: Sum of digits

CODE:

```
#include<stdio.h>

void main()
```

```

{
    int num, sum = 0, digit;
    scanf("%d", &num);
    while(num != 0)
    {
        digit = num % 10;
        sum += digit;
        num = num / 10;
    }
    printf("Sum of digits = %d", sum);
}

```

OUTPUT:

Output
12 Sum of digits = 3

5. Write a program to reverse a number.

IPO

INPUT: A number (num)

PROCESS: Extract digits and build reverse

OUTPUT: Reversed number

CODE:

```

#include<stdio.h>
void main()
{

```

```

int num, rev = 0, digit;
scanf("%d", &num);
while(num != 0)
{
    digit = num % 10;
    rev = rev * 10 + digit;
    num = num / 10;
}
printf("Reversed number = %d", rev);
}

```

OUTPUT:

Output
21
Reversed number = 12

6. Write a program to check whether a number is a palindrome.

IPO

INPUT: A number (num)

PROCESS: Reverse it and compare with original

OUTPUT: Whether it's a palindrome

CODE:

```

#include<stdio.h>
void main()
{
    int num, original, reversed = 0, digit;

```

```
scanf("%d", &num);
original = num;
while(num != 0)
{
    digit = num % 10;
    reversed = reversed * 10 + digit;
    num = num / 10;
}
if(original == reversed)
    printf("Palindrome");
else
    printf("Not Palindrome");
}
```

OUTPUT:

Output
121 Palindrome

7. Write a program to print multiplication table of a number.

IPO

INPUT: A number (n)

PROCESS: Multiply n with 1 to 10

OUTPUT: Multiplication table

CODE:

```
#include<stdio.h>
void main()
{
    int n, i;
    scanf("%d", &n);
    for(i = 1; i <= 10; i++)
    {
        printf("%d x %d = %d\n", n, i, n * i);
    }
}
```

OUTPUT:

Output
5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50

8. Write a program to count the number of digits in a number.

IPO

INPUT: A number (num)

PROCESS: Divide by 10 until 0

OUTPUT: Number of digits

CODE:

```
#include<stdio.h>
void main()
{
    int num, count = 0;
    scanf("%d", &num);

    if(num == 0)
        count = 1;
    else
    {
        while(num != 0)
        {
            num = num / 10;
            count++;
        }
    }
    printf("Number of digits = %d", count);
}
```

OUTPUT:

Output

10

Number of digits = 2



9. Write a program to print the Fibonacci series up to n terms.

IPO

INPUT: Number of terms (n)

PROCESS: Start with 0 and 1, add to get next

OUTPUT: Fibonacci series up to n terms

CODE:

```
#include<stdio.h>
void main()
{
    int n, i;
    int a = 0, b = 1, next;
    scanf("%d", &n);
    for(i = 1; i <= n; i++)
    {
        printf("%d ", a);
        next = a + b;
        a = b;
        b = next;
    }
}
```

OUTPUT:

Output
7
0 1 1 2 3 5 8

10. Write a program to calculate the sum of the first n natural numbers.

IPO

INPUT: A number (n)

PROCESS: Add numbers from 1 to n

OUTPUT: Sum of natural numbers

CODE:

```
#include<stdio.h>
void main()
{
    int n, i, sum = 0;
    scanf("%d", &n);
    for(i = 1; i <= n; i++)
    {
        sum =sum+ i;
    }
    printf("Sum = %d", sum);
}
```

OUTPUT:

Output

10

Sum = 55