Day_02: Conditional Statements and Loops in C

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Topics Covered So Far

- Introduction to C Programming
- Pseudo Code and Flowcharts
- Variables and Data Types
- Arithmetic Expressions

TODAY'S Topics:

- Conditional Statements (if, if-else, nested if, switch)
- Loops (while, for, do-while)

Conditional Statements

- Conditional statements are used to make decisions in a program.
- Types:

1. if statement
2. if-else statement
3. nested if
4. switch-case

Example:

```
if (a > b) {
    printf("A is greater");
}
```

if-else and nested if

- if-else provides two paths of execution.

- Example:

```
if (a > b) {
    printf("A is greater");
} else {
    printf("B is greater");
}
```

- Nested if:

```
if (a > b) {
    if (a > c) {
        printf("A is the largest");
    }
}
```

Switch-Case Statement

- Used when there are multiple conditions based on a single variable.
- Example:

```
switch(day) {
    case 1: printf("Monday"); break;
    case 2: printf("Tuesday"); break;
    default: printf("Invalid day");
}
```

Introduction to Loops

- Loops are used to repeat a block of code.

- Types of Loops:

1. while loop
2. for loop
3. do-while loop

while and for Loops

- while loop:

```
int i = 0;
while (i < 5) {
    printf("%d ", i);
    i++;
}
```

- for loop:

```
for (int i = 0; i < 5; i++) {
    printf("%d ", i);
}
```

do-while Loop

- do-while loop runs the code at least once.

- Example:

```
int i = 0;
do {
    printf("%d ", i);
    i++;
} while (i < 5);
```

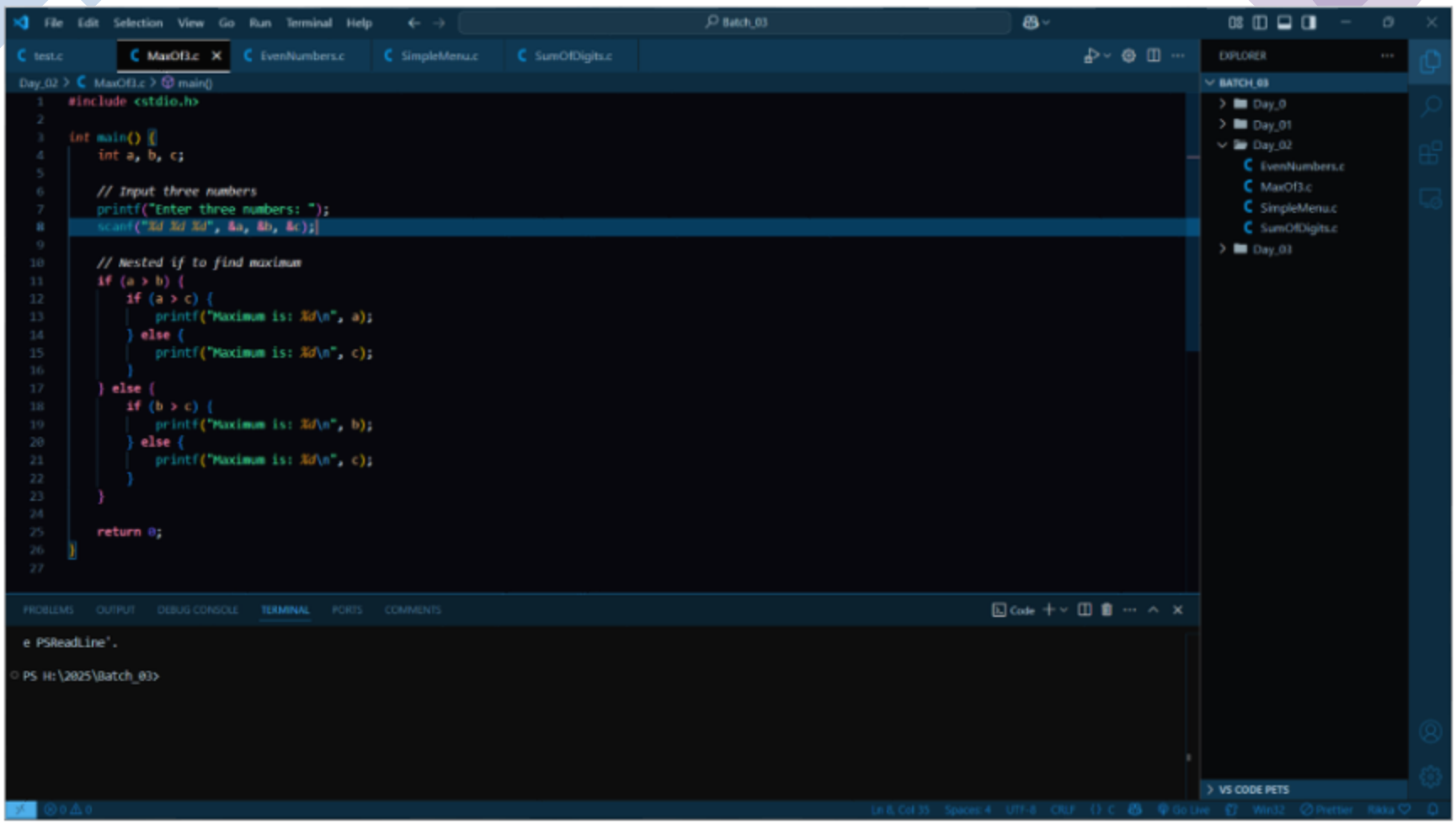
Practice Problems

Practice 1: Find maximum of three numbers using nested if

Practice 2: Print even numbers from 1 to 100 using for loop

Practice 3: Sum of digits of a number using while loop

Practice 4: Display menu and take user choice using switch-case


File Edit Selection View Go Run Terminal Help
Batch_03
test.c
MaxOf3.c
EvenNumbers.c
SimpleMenu.c
SumOfDigits.c
Day_02 > MaxOf3.c > main()
#include <stdio.h>
int main() {
int a, b, c;
// Input three numbers
printf("Enter three numbers: ");
scanf("%d %d %d", &a, &b, &c);
// Nested if to find maximum
if (a > b) {
if (a > c) {
printf("Maximum is: %d\n", a);
} else {
printf("Maximum is: %d\n", c);
}
} else {
if (b > c) {
printf("Maximum is: %d\n", b);
} else {
printf("Maximum is: %d\n", c);
}
}
return 0;
}
EXPLORER
BATCH_03
Day_0
Day_01
Day_02
EvenNumbers.c
MaxOf3.c
SimpleMenu.c
SumOfDigits.c
Day_03
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
COMMENTS
Code
e PSReadLine'.
PS H:\2025\Batch_03>
VS CODE PETS

Section Name	What It Does
Menu Bar	All basic actions like Save, Run, etc.
Activity Bar	Quick access to Explorer, Search, Git, etc.
Side Bar	File navigation
Tab Bar	Switch between multiple files
Editor Window	Where you write code
Panel	See terminal/output/debug info
Terminal	Run commands or programs
Status Bar	Shows file info and shortcuts

Day_02 > MaxOf3.c > main()

```c
#include <stdio.h>

int main() {
    int a, b, c;

    // Input three numbers
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    // Nested if to find maximum
    if (a > b) {
        if (a > c) {
            printf("Maximum is: %d\n", a);
        } else {
            printf("Maximum is: %d\n", c);
        }
    } else {
        if (b > c) {
            printf("Maximum is: %d\n", b);
        } else {
            printf("Maximum is: %d\n", c);
        }
    }

    return 0;
}

```

Day_02 > EvenNumbers.c > ...

```c
#include <stdio.h>

int main() {
    int i;

    // Using for loop to print even numbers
    printf("Even numbers from 1 to 100:\n");
    for(i = 1; i <= 100; i++) {
        if(i % 2 == 0) {
            printf("%d ", i);
        }
    }

    return 0;
}


//SAMPLE OUTPUT //
/*
Even numbers from 1 to 100:
2 4 6 8 10 ... 100

*/
```

Day_02 > SumOfDigits.c > ...

```c
#include <stdio.h>

int main() {
    int num, sum = 0, digit;

    // Input number
    printf("Enter a number: ");
    scanf("%d", &num);

    // Loop to calculate sum of digits
    while(num != 0) {
        digit = num % 10;      // Get last digit
        sum += digit;          // Add digit to sum
        num = num / 10;        // Remove last digit
    }

    // Output result
    printf("Sum of digits = %d\n", sum);

    return 0;
}


// SAMPLE OUTPUT

/*
Enter a number: 1234
Sum of digits = 10

*/
```

Day_02 > SimpleMenu.c > ...

```c
#include <stdio.h>

int main() {
    int choice, a, b;

    // Displaying menu
    printf("Menu:\n");
    printf("1. Add\n");
    printf("2. Subtract\n");
    printf("3. Multiply\n");
    printf("4. Divide\n");
    printf("Enter your choice (1-4): ");
    scanf("%d", &choice);

    // Input numbers
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);

    // Using switch-case
    switch(choice) {
        case 1:
            printf("Result = %d\n", a + b);
            break;
        case 2:
            printf("Result = %d\n", a - b);
            break;
        case 3:
            printf("Result = %d\n", a * b);
            break;
```

```c
        case 4:
            if(b != 0)
                printf("Result = %.2f\n", (float)a / b);
            else
                printf("Division by zero not allowed!\n");
            break;
        default:
            printf("Invalid choice.\n");
    }

    return 0;
}


//OUTPUT SAMPLE//
/*
Menu:
1. Add
2. Subtract
3. Multiply
4. Divide
Enter your choice (1-4): 1
Enter two numbers: 10 20
Result = 30

*/
```

Goal of the Day

- Understand:
  - Conditional Statements
  - Loops
  - Code Examples