Assignment (MID)-Set A

For students with IDs having last digits 0, 2, 4, 6, or 8:

1. **Pascal's Triangle Pattern [5]**

Problem Statement: Write a C program to generate Pascal's Triangle up to N rows using a 2D array. Pascal's Triangle is a triangular array of the binomial coefficients, where each number is the sum of the two directly above it.

Sample Input	Sample Output
5	1 1 1 1 2 1 1 3 3 1 1 4 6 4 1

2. Create a Simple Student Management System [10]

Write a C program that manages information for up to 10 students in a class. The program should allow the user (teacher) to:

1. **Add Students:** Input the name (string), roll number (integer), and marks (float) for each student. The user should be able to add multiple students, but not more than 10.
2. **Display All Students:** Display the list of all students along with their roll numbers and marks.
3. **Search for a Student:** Allow the user to search for a student by roll number and display the student's details.
4. **Calculate Average Marks:** Calculate and display the average marks of all students in the class.
5. **Find the Student with the Highest Marks:** Determine and display the name and roll number of the student with the highest marks.
6. **Exit:** Exit from the program.

Hints:

- Use **1D arrays** to store student names(string), roll numbers(int), and marks(float).
- Implement a **menu-driven** approach for selecting different operations. Use a **loop** to print the menu repeatedly and take the user's choice until the user selects the exit option. Handle different menu options using **switch or if-else** statement.
- Use **loops** to implement the operations (display, search, calculate etc).

Sample input/output:

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 1
Enter the name of the student: John
Enter the roll number: 1
Enter the marks: 90

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 1
Enter the name of the student: Kim
Enter the roll number: 2
Enter the marks: 85

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 2

Name: John, Roll Number: 1, Marks: 90.00
Name: Kim, Roll Number: 2, Marks: 85.00

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 3
Enter roll number to search: 2
Student found: Name: Kim, Roll Number: 2, Marks: 85.00

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 4
Average marks of the class: 87.50

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 5
Student with highest marks: Name: John, Roll Number: 1, Marks: 90.00

--- Student Management System ---
1. Add Students
2. Display All Students
3. Search for a Student
4. Calculate Average Marks
5. Find Student with Highest Marks
6. Exit
Enter your choice: 6
Exiting the program...