Institute of Geographical Information Systems

CS-212 - Object Oriented Programming LAB

Semester: Fall 2025	**Class: SCEE-IGIS - 2024**
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Submitted to: Ma'am Alvina Anjum	**Due Date: Sep 10, 2025**

Lab 01: Functions

Question No 1:

Write a program using functions in which it asks the user to enter their data based on which the program decides whether the student got admission in NUST or not. The program takes name, CNIC, date of birth, NUST test % and FSc % as input. The criteria for admission is given below:

A student is given admission if the age is more than 16 years old and less than 25 and the aggregate percentage is greater than 75%. Aggregate percentage is calculated by taking 75% of FSc percentage and 25% of NUST entry test %. Assume that this program is written in year 2022.

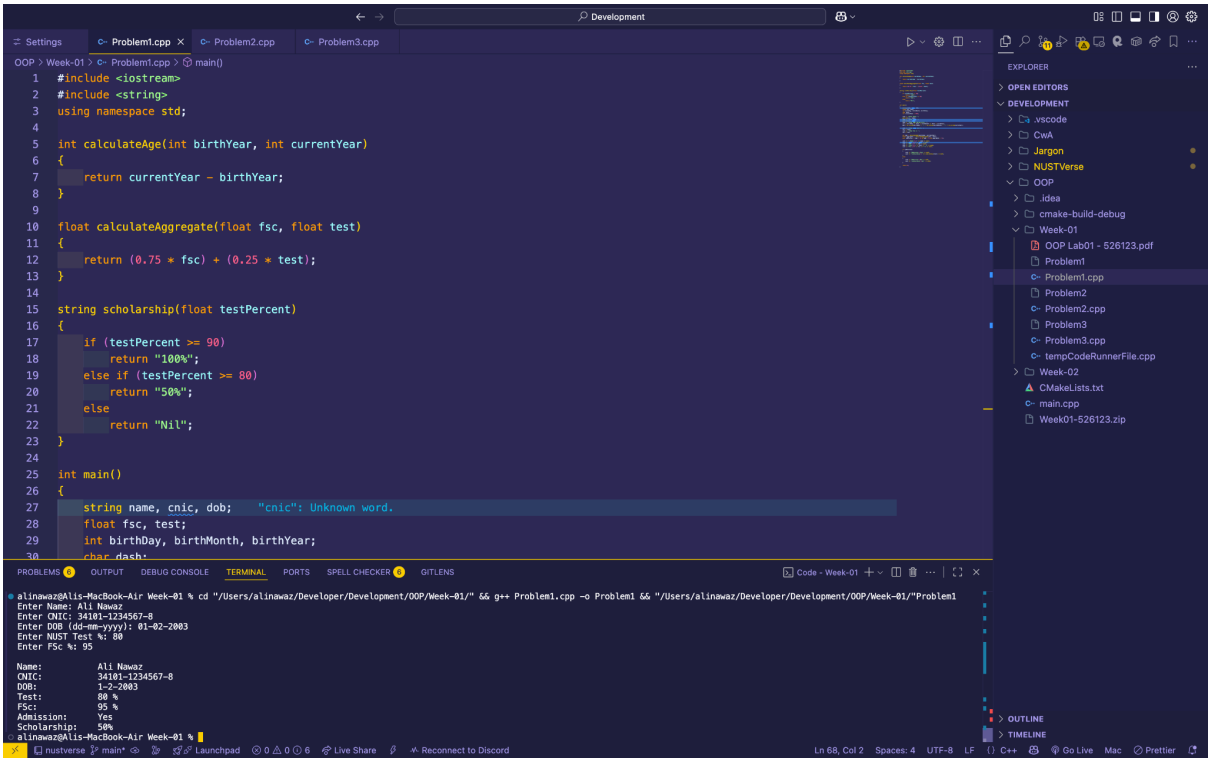
If the student passes the criteria for admission, he/she is awarded scholarship based on following criteria

NUST Entry Test %	Scholarship
< 80	Nil
>= 80	50%
>= 90	100%

A sample output is shown below:

Name: Hassan
CNIC: 37405-2225477-0
DOB: 20-10-2005
Test: 80 %
FSc: 80%
Admission: Yes
Scholarship: 50%

Screenshot:



Question No 2:

In the Counting Poetry Slam, you start at 1 and want to reach a number N.

- Normally, you just add 1 each time.
- But you have a twist: at most once, you can reverse the digits of the current number.

Write a program that calculates the minimum steps needed to reach N using these rules.

Input:

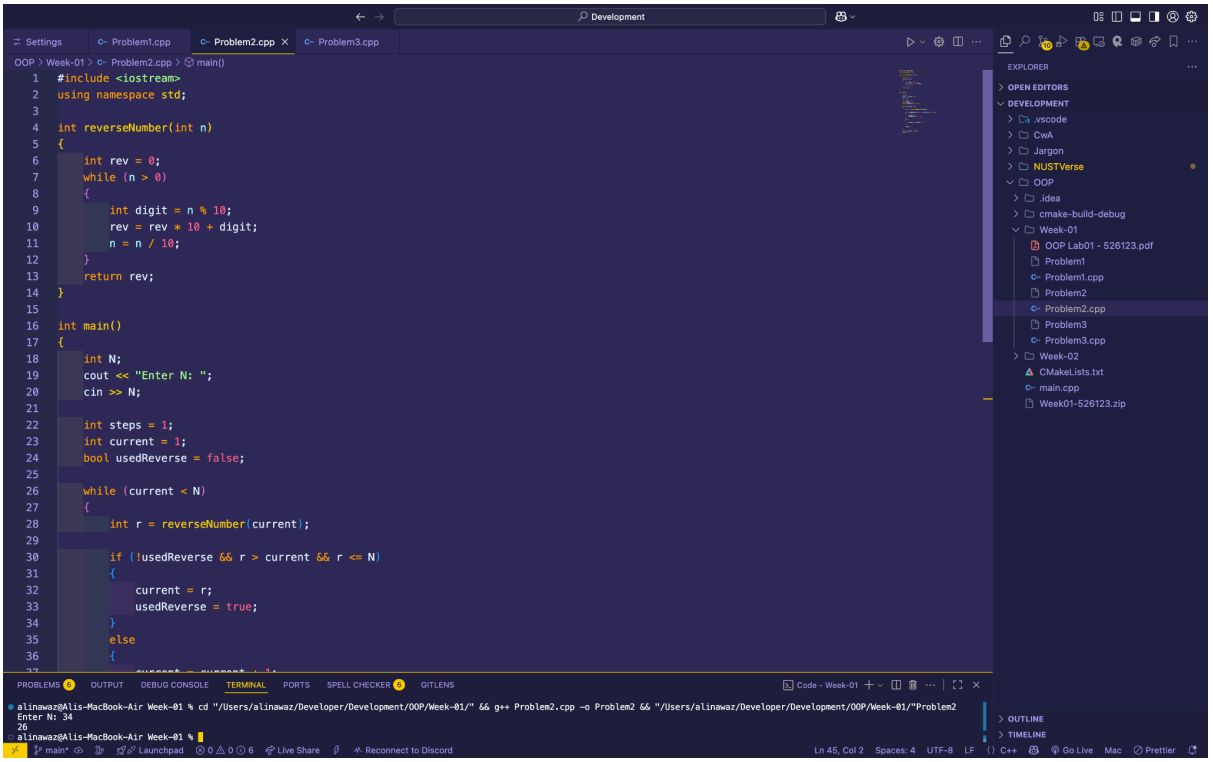
- A single integer N (the target number).

Output:

- The minimum steps required.

Example 1:
Input: 19
Output: 19
Explanation: Just count from 1 to 19.
Example 2:
Input: 23
Output: 13
Explanation: 1 → 2 → … → 12 → reverse(12=21) → 22 → 23

Screenshot:



Question No 3:

When you invest money in a savings account your money earns a certain amount of interest over a period of time. For example, investing $100 in an account that yields 1% interest annually would mean that after 1 year your account would be worth $101.

If you left this money in your account you would earn additional interest in the following year due to the fact that your account now has $101 instead of the initial deposit of $100. You would earn interest on the initial deposit plus the $1 you earned in interest—this is called "compound interest."

For this problem, you will write a program that calculates how much a person can earn by investing in a high-yield savings account. The program should ask the user for an initial deposit amount and an interest rate. The program will then generate a 3-month projection that illustrates how much money the user can expect to earn. Assume that interest is compounded monthly (i.e. if your account earns a rate of 12% interest annually then you would earn a rate of 1% per month). Here's a sample running of the program:

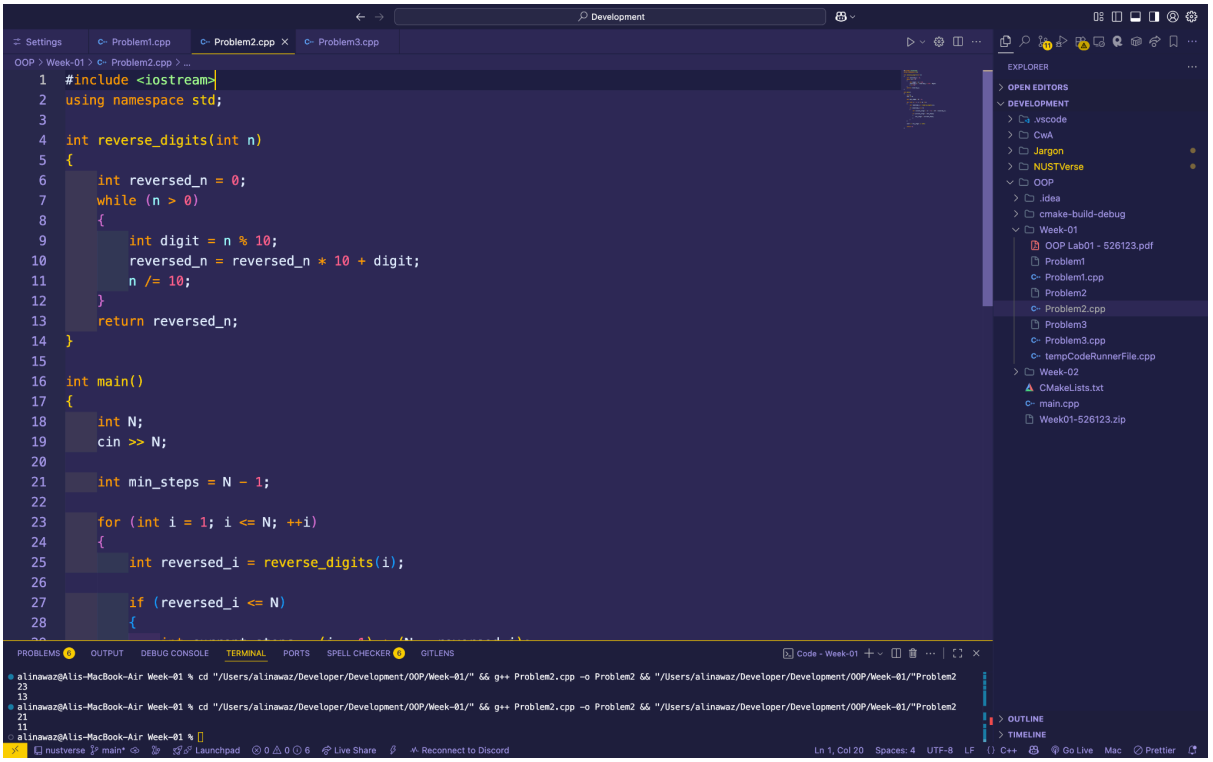
```
This program will project how much you can earn by investing money in a high-yield savings account over a 3-month period.

To begin, enter how much money you would like to initially invest (i.e. 500): 500
Next, enter your projected annual interest rate. For example, enter 0.05 for 5%: 0.05

Calculating . . .

Month Starting Balance     Interest   Ending Balance
1     500.00               2.08       502.08
2     502.08               2.09       504.18
3     504.18               2.10       506.28
```

Screenshot:


Development
Settings
Problem1.cpp
Problem2.cpp
Problem3.cpp
OOP > Week-01 > Problem2.cpp > ...
#include <iostream>
using namespace std;
int reverse_digits(int n)
{
int reversed_n = 0;
while (n > 0)
{
int digit = n % 10;
reversed_n = reversed_n * 10 + digit;
n /= 10;
}
return reversed_n;
}
int main()
{
int N;
cin >> N;
int min_steps = N - 1;
for (int i = 1; i <= N; ++i)
{
int reversed_i = reverse_digits(i);
if (reversed_i <= N)
{
EXPLORER
OPEN EDITORS
DEVELOPMENT
.vscode
CwA
Jargon
NUSTVerse
OOP
.idea
cmake-build-debug
Week-01
OOP Lab01 - 526123.pdf
Problem1
Problem1.cpp
Problem2
Problem2.cpp
Problem3
Problem3.cpp
tempCodeRunnerFile.cpp
Week-02
CMakeLists.txt
main.cpp
Week01-526123.zip
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
SPELL CHECKER
GITLENS
Code - Week-01
alinawaz@Alis-MacBook-Air Week-01 % cd "/Users/alinawaz/Developer/Development/OOP/Week-01/" && g++ Problem2.cpp -o Problem2 && "/Users/alinawaz/Developer/Development/OOP/Week-01/"Problem2
23
13
alinawaz@Alis-MacBook-Air Week-01 % cd "/Users/alinawaz/Developer/Development/OOP/Week-01/" && g++ Problem2.cpp -o Problem2 && "/Users/alinawaz/Developer/Development/OOP/Week-01/"Problem2
21
11
alinawaz@Alis-MacBook-Air Week-01 %
OUTLINE
TIMELINE
nustverse
main*
Launchpad
Live Share
Reconnect to Discord
Ln 1, Col 20
Spaces: 4
UTF-8
LF
C++
Go Live
Mac
Prettier