

AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)
Faculty of Science and Technology (FST)
Department of Computer Science (CS)
Introduction to Programming Mid-Term Lab Assignment

1. A) Write a C++ program that takes the marks of three subjects physics, chemistry, and math from the student and prints the obtained grade of individual subjects by following the grading system:

80-90	A+
70-79.99	A
60-69.99	B+
50-59.99	B
<50	F

2. A) Write the differences between for loop, while loop and do while loop with examples.
B) Explain break and continue keywords by providing examples.
C) Explain nested if-else and nested loop with examples.
D) What is type casting? Explain with example.
3. An online mango selling company decided to give bonus of 24% on annual salary to employee if the cost of sold mangoes by him/her in last year (2022) is more than 15000 Taka. The price of one kg of mangoes is 350 Taka.

Now write a C++ program that acts in accordance with the following:

- ❖ Ask employee for monthly salary and the quantity of mangoes he/she had sold in 2022.
 - ❖ Calculate and print the annual salary of the employee.
 - ❖ Inform employee of his/her total cost of mangoes that he/she had sold in 2022.
 - ❖ If the amount of sold mangoes is worthy of the bonus let the employee know that he/she received a 24% annual bonus and print the annual salary with bonus.
 - ❖ Otherwise, inform the employee about the cost and quantity that were required for getting the 24% annual bonus.
4. Develop a program using C++ programming language for an online gold shop in Bangladesh. Use only **Switch-Case** to solve the problem. The program will act in accordance with the following:
- ❖ Ask the customer “Which type of gold do you want to purchase?” “Press 1 for 22-Karat Gold” “Press 2 for 24-Karat Gold”
 - ❖ Ask the customer to input the quantity(gram) of gold
 - ❖ Now calculate and print the total cost in BDT
 - ❖ At the end of the code the program will ask the customer if the customer wants to convert the total cost in US dollar or not. If customer inputs ‘Y’, the program will convert it, if the customer inputs ‘N’ then it will print “Thank you”. (1 US Dollar = 110.24 TAKA)

Sample output-1

```
Which type of gold do you want to purchase?
press 1 for 22-Karat Gold
press 2 for 24-Karat Gold
2
Enter the quantity(gram) of gold that you want to purchase:100
Price of 1 gram of 24-karat gold is 7,126.6 Taka
Your total cost is: 712660 BDT
Do you want to convert the money in US Dollar? press Y for yes and N for NO
Y
Total cost:$6464.62
```

Sample output-2:

```
Which type of gold do you want to purchase?
press 1 for 22-Karat Gold
press 2 for 24-Karat Gold
1
Enter the quantity(gram) of gold that you want to purchase:
5
Price of 1 gram of 22-karat gold is 6,529.4 Taka
Your total cost is: 32647 BDT
Do you want to convert the money in US Dollar? press Y for yes and N for NO
N
Thank you
```

5. A) Write a C++ program that takes a string from the user and prints the reversed form of the string. Use array to take input.
B) Now check whether the inputted string is palindrome or not.
Sample:
Input String: MADAM OR 2002
Output: Palindrome
6. Write a C++ program that takes number of goals scored by Lionel Messi and Neymar da Silva Santos Junior in recent N football matches. Find the average goal scored by each player and type cast it in float. Now, determine who is a better player.
7. Write a C++ program which will take the total runs of your favorite cricket player in last 4 ODI matches. Now calculate and print the average run of the player. Then, find the average ODI run of your favorite player in 2022 from google. If the average run of last 4 ODIs is greater than the average run of 2022 then print "The performance of the player(Name) is improving", otherwise print "The performance of the player(Name) is deteriorating".
8. Write a C++ program which will ask the user to input a range. Then it will find the even numbers, odd numbers and prime numbers from the range and will store them in three different arrays. Print the numbers from the array.

**** Submission Deadline: 29/10/2023 (Sunday), 2 PM.

Theoretical Answers: Take pictures of your handwritten answers, make pdf and attach the pdf in the assignment section on MS Teams.

Coding Part: Just attach the .cpp files in the assignment section on MS Teams.