Instructions

This assignment is designed to help you practice basic C++ concepts. There are 12 questions in total, including multiple choice questions and coding exercises. The questions aim to improve your understanding of C++ fundamentals like input/output, variables, data types, and selection structures (if, ternary operator, and switch case). Therefore, cheating is forbidden.

I. Multiple choice questions:

1) Which data type would be most suitable for storing a large integer value?

a) Int
b) Float
c) Char
d) Long long

2) What will be the output of the following code snippet?

```cpp
#include <iostream>
using namespace std;

int main() {
    int x = 10;
    if (x > 5)
        cout << "x is greater than 5";
    else if (x == 5)
        cout << "x is equal to 5";
    else
        cout << "x is less than 5";

    return 0;
}
```

a) 0
b) 10
c) 5
d) Compilation error

3) **What will be the output of this code?**

```cpp
#include <iostream>
using namespace std;

int main() {
    int option = 3;
    switch(option) {
        case 1: cout << "One";
        case 2: cout << "Two";
        case 3: cout << "Three";
        case 4: cout << "Four";
        default: cout << "Default";
    }
    return 0;
}
```

a) ThreeFourDefault
b) Three
c) Default
d) Compilation error

4) **What is the equivalent of the following code using the ternary operator?**

```cpp
if (x > 0)
    y = 1;
else
    y = 0;
```

a) y = x > 0 ? 1 : 0;
b) y = x ? 1 : 0;
c) y = 1 ? x : 0;
d) y = x > 0 || 1 : 0;

II. Coding problems:

1) Write a program to get 3 numbers from the user and calculate the average of them.

2) Write a program to get 5 numbers from the user and calculate the sum of the odd numbers only between them.
3) Write a C++ program that determines if a given year is a leap year. (All years which are perfectly divisible by 4 are leap years except for century years (years ending with 00), which are leap years only if they are perfectly divisible by 400).
    - Leap year examples: 1968/ 2004/ 2000/ 1600/ 2012
    - Not leap year examples: 1971/ 2010/ 2006/ 1800/ 1900
4) Write a C++ program to get marks from the user and print the grade, where the grading system is:
    - A : 90 <= marks <= 100
    - B : 75 <= marks <= 89
    - C : 60 <= marks <= 74
    - F: marks < 60
5) Write a C++ program to get numbers from 1 -> 12 from the user, and print the corresponding month of the year for each number. (Use switch case)
6) Write a program that takes a single character as input and checks whether it is an uppercase letter, a lowercase letter, or a digit

III. Bonus

7) Write a program to get 3-digit number from the use and reverse it.
8) Write a C++ program that checks whether a given 3-digit number is a palindrome or not. A number is considered a palindrome if it reads the same forward and backward.