

**Coding Instructions:**

1. The variables name should not start with capital letter for example, child and adult. If it is a composed word, the first letter of the second word should be capital like: noAdult.
2. Variable with constant values are written in upper case for example, CHILD\_PRICE.
3. The format of the output can be easily organized through the C++ manipulator like setw(). However, you have to “#include <iomanip>”

**Section A:****Problem 1:**

(a) Write a Program that prompts the user to enter a decimal number and outputs the number rounded to the nearest integer.

(b) Modify the above program where the user enters five decimal numbers, sum these numbers and round the sum to the nearest integer.

**Problem 2:**

Write a program using a loop that asks the user to enter a series of integers. The user should enter **99** to signal the end of the series. After all the numbers have been entered, the program should display the largest and smallest numbers entered.

**Problem 3:**

The formula for converting a temperature from Fahrenheit to Celsius is:

$$C = 5/9 * (F - 32)$$

Where F is the Fahrenheit temperature and C is the Celsius temperature. Write a function named *toCelsius* that accepts a Fahrenheit temperature as an argument. The function should return the temperature, converted to Celsius. Demonstrate the function by calling it in a loop that displays a table of the Fahrenheit temperatures 20 through 40 and their Celsius equivalents.

**Problem 4:**

Write a c++ program to find the factorial of a number using recursion

## Section B:

### Problem 1:

A movie theatre only keeps a percentage of the revenue earned from ticket sales. The remainder goes to the movie distributor. Write a program that calculates a theatre's gross and net box office profit for a night. The program should ask for the name of the movie, and how many adult and child tickets were sold. (The price of an adult ticket is \$6.00 and a child's ticket is \$ 3.00). It should display a report similar to the following example:

Movie Name:	"Wheels of Fury"
Adult Tickets Sold:	382
Child Tickets Sold:	127
Gross Box Office Profit:	\$2673.00
Net Box Office Profit:	\$534.60
Amount Paid to Distribution	\$2138.40

#### Notes:

- The movie name is taken from the user and displayed in the output
- The adult tickets sold are computed through the multiplication of the number of adult tickets into price, and the same calculation is done for the child tickets.
- The Gross is the overall total, and the net is 20% of the gross
- The amount paid to distribution is the remaining amount after subtracting the net from the gross

Complete the missing parts of the code using the above given instructions:

```
#include <iostream>
#include <.....>;
using namespace std;
int main ()
{
    // declare variables
    ..... adult;
    ..... child;
    .....
    .....
    // take the Input from the user here
    cout << "Enter name of Movie: " << endl;
    .....
    .....
    // Make the necessary calculations here
    adult = noAdult * ADULT_PRICE; //the profit out of selling the adult tickets
    .....
    .....
    .....
    // do the necessary output format of the output here
    cout << setw (20) << "Movie Name:" << setw (20) << movieName << endl;
    .....
    .....
    Return 0;
}
```

#### Further instructions:

Make the necessary modifications to make your program ask about the adult and child ticket price.

**Problem 2:**

A teacher has five students who have taken four tests. The teacher uses the following grading scale to assign a letter grade to a student; based on the average of his/her four test scores.

Test Score	Letter Grade
80-100	A
70-79	B
69-60	C
59-50	D
49-0	F

Write a program that uses an array of *string* objects to hold the five student names, an array of five *characters* to hold the five students' letter grades, and a 2D array of four doubles to hold each student's set of test scores.

The program should allow the user to enter each student's name and his /her four test scores. It should then calculate and display each student average test score and a letter grade based on the average.

Input validation: Don't accept test scores less than 0 or greater than 100.

**Notes:**

- Array of string with five cells to hold the students names (input)
- Array of characters with five cells to hold the grades (output)
- 5 arrays of double with four cells (array for each student) to hold his/her four courses scores.

**Problem 3:**

Design a program that takes a date in three integers: day, month and year. Print the date in the following format:

12/25/2012  
December 25, 2012  
25 December 2012

**Notes:**

1. Do not accept values for the day greater than 31 or less than 1
2. Do not accept values for month greater than 12 or less than 1