**Programming Assignment 4**

The population of town A is less than the population of town B. How- ever, the population of town A is growing faster than the population of town B. Write a program that prompts the user to enter the popu- lation and growth rate of each town. The program outputs after how many years the population of town A will be greater than or equal to the population of town B and the populations of both the towns at that time. (A sample input is: Population of town A 5 5,000, growth rate of town A 5 4%, population of town B 5 8,000, and growth rate of town B 5 2%.)

Using Blackboard,

* **Navigate to** the assignment
* **attach your C++ source file** (.cpp file)
* **submit** your assignment.

|  | **Scorecard Program 4** |  |
| --- | --- | --- |
|  | **Description** | **Points** |
| **Documentation (10%)** | program file name | 2 |
|  | brief description of assignment | 2 |
|  | name of the author | 2 |
|  | course title and meeting time | 2 |
|  | assignment number and due date | 2 |
| **Formatting (10%)** | Use proper indentation in main function | 2 |
|  | Use proper indentation in if/switch statements | 4 |
|  | Use proper indentation in while/do-while/for statements | 4 |
| **Technique (40%)** | Identifiers have meaningful names | 4 |
|  | Appropriate variable declarations | 4 |
|  | User prompts for population and growth rate for 2 different towns | 10 |
|  | Read populations for 2 different towns | 2 |
|  | Read growth rates for 2 different towns | 2 |
|  | Do not accept negative or zero values for the populations | 4 |
|  | Do not accept negative or zero values for the growth rates | 4 |
|  | Use a loop to determine # of years it will take before town A population is greater or equal to town B population | 5 |
|  | Statements are organized by input/process/output | 5 |
| **Output (40%)** | Calculations for populations are correct | 14 |
|  | Program runs without modification | 6 |
|  | Error message for invalid population values | 4 |
|  | Error message for invalid growth rate | 4 |
|  | Output of population values properly labeled | 8 |
|  | Output of # years is properly labelled | 4 |
|  | **Late (5% per day)** |  |
|  | **TOTAL** | **100** |

**Late Penalties:**

* 5% of the grade is deducted for each daythe assignment is overdue**.**
* Assignments more than 10 days late are not accepted.