Lesson 1 - Projects

1. Bank Charges (Use if ... else) - (50 point)

A bank charges a base fee of $10 per month, plus the following check fees for a commercial checking account:

$.10 each for less than 20 checks
$.08 each for 20–39 checks
$.06 each for 40–59 checks
$.04 each for 60 or more checks
Write a program that asks for the number of checks written for the month. The program should then calculate and display the bank's service fees for the month.

Note: From Ch 3

9. Population (50 point)

Write a program that will predict the size of a population of organisms. The program should ask for the starting number of organisms, their average daily population increase (as a percentage), and the number of days they will multiply. For example, a population might begin with two organisms, have an average daily increase of 50 percent, and will be allowed to multiply for seven days. The program should use a loop to display the size of the population for each day.

Input Validation: Do not accept a number less than 2 for the starting size of the population. Do not accept a negative number for average daily population increase. Do not accept a number less than 1 for the number of days they will multiply.

Note: From Ch 4

7. Test Average and Grade (50 point)

Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following methods in the program:

calcAverage—This method should accept five test scores as arguments and return the average of the scores.
determineGrade—This method should accept a test score as an argument and return a letter grade for the score, based on the following grading scale:

Score	Letter Grade
90–100	A
80–89	B
70–79	C
60–69	D

Note: From Ch 5

2. Payroll Class (50 point)

Write a Payroll class that uses the following arrays as fields:

- employeeId – An array of seven integers to hold employee identification numbers. The array should be initialized with the following numbers:

  5658845 4520125 7895122 8777541
  8451277 1302850 7580489

- hours – An array of seven integers to hold the number of hours worked by each employee

- payrate – An array of seven doubles to hold each employee's hourly pay rate

- wages – An array of seven doubles to hold each employee's gross wages

The class should relate the data in each array through the subscripts. For example, the number in element 0 of the hours array should be the number of hours worked by the employee whose identification number is stored in element 0 of the employeeId array. That same employee's pay rate should be stored in element 0 of the payRate array.

In addition to the appropriate accessor and mutator methods, the class should have a method that accepts an employee's identification number as an argument and returns the gross pay for that employee.

Demonstrate the class in a complete program that displays each employee number and asks the user to enter that employee's hours and pay rate. It should then display each employee's identification number and gross wages.

Input Validation: Do not accept negative values for hours or numbers less than 6.00 for pay rate.

Note: From Ch 7