**Two types of files should be submitted on the blackboard, .pdf, .cs (no hand written).**

**1. Submit your answers in hw3.pdf for the following exercise problems from the textbook.**

**7.1, 8.1.**

**2. Please separately submit your source code programs in \*.cs files for the following exercise problems from the textbook (each program has an individual .cs file)**

**7.35, 8.17, 8.20**

**Question 1** Fill in the blank(s) in each of the following statements (30 Points):

**7.1**

h) An object of class Random produces pseudorandom numbers

k) The scope of a declaration is the portion of an app that can refer to the entity in the declaration by its unqualified name.

l) It’s possible to have several methods with the same name that each operate on different types or numbers of arguments. This feature is called override .method .

n) A method that calls itself either directly or indirectly is a(n) recursive method

q) Types are either value types or reference types.

**8.1**

a) Lists and tables of values can be stored in arrays .

b) An array is a group of data items (called elements) containing values that all have the

same data type .

c) The foreach statement allows you to iterate through the elements in an array without

using a counter.

d) The number that refers to a particular array element is called the element’s index .

e) An array that uses two indices is referred to as a(n) 2-Dimensional array.

f) Use the foreach header foreach(double e in array) to iterate through double array numbers.

g) Command-line arguments are stored in the array args as strings .

h) Use the expression args[0] to receive the total number of arguments in a command line. Assume that command-line arguments are stored in args.

i) Given the command MyApp test, the first command-line argument is tests .

**7.35 (Recursive Power Calculation)** **(20 Points)**

Write recursive method Power(base, exponent) that, when called, returns

For example, Power(3,4) = 3\*3\*3\*3. Assume that exponent is an integer greater than or equal to 1. The recursion step should use the relationship

=base \*

The terminating condition occurs when exponent is equal to 1, because

**8.17 (Dice Rolling) (20 Points)**

Write an app to simulate the rolling of two dice. The app should use an object of class Random once to roll the first die and again to roll the second die. The sum of the two values should then be calculated. Each die can show an integer value from 1 to 6, so the sum of the values will vary from 2 to 12, with 7 being the most frequent sum and 2 and 12 the least frequent sums. **Figure 8.26** shows the 36 possible combinations of the two dice. Your app should roll the dice 36,000 times. Use a one-dimensional array to tally the number of times each possible sum appears. Display the results in tabular format. Determine whether the totals are reasonable (e.g., there are six ways to roll a 7, so approximately one-sixth of the rolls should be 7).

A picture containing text, electronics, keyboard

Description automatically generated

Figure 8.26 The 36 possible sums of two dice

**8.20 (Total Sales)** (**30 Points**)

Use a rectangular array to solve the following problem: A company has three

salespeople (1 to 3) who sell five different products (1 to 5). Once a day, each salesperson passes in a slip for each type of product sold. Each slip contains the following:

a) The salesperson number

b) The product number

c) The total dollar value of that product sold that day

Thus, each salesperson passes in between 0 and 5 sales slips per day. Assume that the information from all of the slips for last month is available. Write an app that will read all the information for last month’s sales and summarize the total sales by salesperson and by product. All totals should be stored in rectangular array sales. After processing all the information for last month, display the results in tabular format, with each column representing a particular salesperson and each row representing a particular product. Cross-total each row to get the total sales of each product for last month. Crosstotal each column to get the total sales by salesperson for last month. Your tabular output should include these cross-totals to the right of the totaled rows and below the totaled columns.