ICS4M0 – Arrays

1. An array to store marks for twenty students has been declared as follows:

int[] marks = new int[20];

* 1. What is the array identifier? marks
  2. What is the identifier of the first element in the array? marks[0]
  3. What value is stored in each element by the declaration? 20 memory spaces
  4. What is the value of marks.length? 20
  5. What are the indicies of the array? 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19

1. The following table shows how many bits the computer requires to store each variable type.

|  |  |
| --- | --- |
| Variable type | Number of bits |
| boolean | 1 |
| int | 32 |
| float | 32 |
| double | 64 |

How much space (in bits) would be required to store the elements of each array?

1. int[] a = new int [20]; 640 bits
2. double[] b = new double[100]; 6400 bits
3. float[] c = new float[50]; 1600 bits
4. Boolean[] d = new Boolean[1000]; 1000 bits
5. Write declaration to create arrays that would be appropriate for storing the indicated data.
   1. the number of votes cast for five candidates in an election

int[] votes = new int[5];

* 1. the answers to a twenty-question true/false quiz

Boolean[] answers = new Boolean[20];

* 1. average family size in the years 1900, 1910, …., 2000

Double[] average = new Double[11];

1. a) Write a statements that creates and initializes an array terms of double values to store the terms of the sequence

t1= 1 , t2 = 2 , ….., t6 = 6

2 3 7

Double[] values = {1/2, 2/3, 3/4, 4/5, 5/6, 6/7};

b) What is the value of terms.length? 6

1. The table gives atomic masses of the eight lightest elements listed according to atomic number

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Atomic Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Atomic Mass | 1.0 | 4.0 | 6.9 | 9.0 | 10.8 | 12.0 | 14.0 | 16.0 |

Suppose that the data in this table were to be represented by the array mass declared by the statement

double[] mass = {0, 1, 4, 6.9, 9, 10.8, 12, 14, 16};

1. What is the values of mass[2]? 4.0
2. What is the value of mass[5]? 10.8
3. What are the possible values of the indicies of the array? 0 up to 8
4. What is the identifier of the element whose values is 6.9? mass [3]
5. Of what type are the elements? Double
6. What is the vale of mass.length? 8