**CSC 229 Test 1 Prep**

**1. Given the following constants, mark the data type most appropriate to represent it (place an X at the intersection of the constant and data type):**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Constant** | **char** | **byte** | **short** | **int** | **long** | **float** | **double** | **String** |
| **-22** |  |  |  |  |  |  |  |  |
| **Crescent** |  |  |  |  |  |  |  |  |
| **31.9245367894** |  |  |  |  |  |  |  |  |
| **28000** |  |  |  |  |  |  |  |  |
| **450000** |  |  |  |  |  |  |  |  |
| **$** |  |  |  |  |  |  |  |  |
| **789345267100** |  |  |  |  |  |  |  |  |
| **120** |  |  |  |  |  |  |  |  |
| **-3987** |  |  |  |  |  |  |  |  |
| **Student Address** |  |  |  |  |  |  |  |  |

**2. what is the role of each hardware component in the execution of a program?**

**3. what are the roles of software components (compiler, runtime environment, operating system in the execution of a program?)**

**4. Develop a complete Java program that prompts the user to enter three points (x1, y1), (x2, y2), (x3, y3) of a triangle and displays its area. The formula for computing the area of a triangle is**

**s = (side1 + side2 + side3)/2;**

**area2 = ( s(s-side1)(s-side2)(s-side3) )**

**5. Develop a program that receives the radius of a circle centered at origin (r) and coordinates of a point (x,y). Report true if (x,y) is inside the circle, false otherwise. (HINT: a point is inside a circle if its distance from origin is smaller than the radius of the circle)**

****

**6. Write a complete Java program that prompts the user to enter an integer and checks whether the number is divisible by both 5 and 6, or neither of them, or just one of them.**

**7. Write a complete Java program that displays the following table:**

**a b pow(a,b)**

**2 1 2**

**2 2 4**

**2 3 8**

**2 4 16**

**2 5 32**

**8. You can use Cramer’s rule to solve the following 2 \* 2 system of linear equation:**

**aX + bY = c x = (ed-bf) / (ad-bc)**

**cX + dY = f Y = (af-ec) / (ad-bc)**

**Write a complete Java program that prompts the user to enter a, b, c, d, e, and f and reports the result using dialog boxes. If ad - bc is 0, report that “The equation has no solution”.**

**9. Develop a complete Java Program that prompts the user for the rank of a teaching faculty (a String) and the number of credit hours she/he taught during summer (an integer). Report the total summer earnings for that faculty. Use the following table:**

**Wages for 1 credit of teaching for full-time faculty members**

|  |  |
| --- | --- |
| **Rank** | **Year 2021** |
| **Professor** | **$ 2,235** |
| **Associate Professor** | **$ 1,892** |
| **Assistant Professor** | **$ 1,750** |
| **Instructor** | **$ 1,640** |

**10.** **Programming languages support operations on basic data types such as add, multiply,…. Evaluate the given expression using Java precedence rules step by step.**

**(13 + 2)/4 – 5\*2 – 11%(2 \* 2 )+ 12/(3 \* 2)**

|  |  |  |
| --- | --- | --- |
| **Step Number** | **Operation** | **Intermediate Result** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
| **5** |  |  |
| **6** |  |  |
| **7** |  |  |
| **8** |  |  |
| **9** |  |  |
| **10** |  |  |