CSE 1321 Lecture Final Exam

Version A

Spring 2019

**Question 1) Warmup question:** Write a function named PowerXY() (only the function, no main is necessary) that takes in two numbers and returns the first number to the power of the second (e.g. passing 3 and 4 should return 81 because 3^4 = 81) **(15 points)**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**Question 2) SWITCH/CASE:** Zoo Atlanta has asked you tohelp update their feeding program. You are to determine which statement will be written to the console that tells the animal handlerswhich animal needs to be feed based on the following code segment: **(10 points)**

METHOD VOID animalCare(parameters: animal)

BEGIN METHOD

SWITCH(animal)

CASE ‘E’: PRINTLINE(“The ELEPHANTS need care and feeding.”)

BREAK

CASE ‘G’: PRINTLINE(“The GIRAFFES need care and feeding.”)

CASE ‘H’: PRINTLINE(“The HIPPOPOTOMI need care and feeding.”)

BREAK

CASE ‘L’: PRINTLINE(“The LIONS need care and feeding.”)

BREAK

CASE ‘Z’: PRINTLINE(“The ZEBRAS are next for care and feeding.”)

DEFAULT: PRINTLINE(“All animals must be fed”)

END SWITCH

Method Call: animalCare (Z) – use this to determine which statement to print.

Exact output is:

END METHOD

**Question 3) 2D Arrays:** 23andme (DNA testing company) has given you a 10x10 array of characters called DNA which contains a sequence of DNA bases (letters G, T, A, and C). They need you to process the array, so that it counts the number of each base and prints the results out to the console for the researchers to use (Do not create the array, it is already created, no need to create main either). **(30 points)**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**Question 4) Sorting:** Sort {5 4 3 2 1} into ascending order using the sorting algorithm of your choice (Bubble, Exchange, Insertion or Selection). You must show each movement of the sort to get any credit (no need to write down the algorithm) **(15 points)**

Answer is using: Bubble ⃝ Exchange ⃝ Insertion ⃝ Selection ⃝

**Question 5) Classes/Methods:** iRobot has contacted you to help them create a Robot class for their newest automaton. Write class Robot that has the following specifications:

Attributes (should not be visible outside the class): Name, Speed, Latitude (North/South – a number), and Longitude (East/West – a number)

Constructors: default and overloaded for all attributes

Methods: North(), East(), West(), South() – which increment/decrement either the latitude or longitude by the current speed of the robot (e.g. North() will change the latitude of the robot)

SetSpeed(), getSpeed() – sets/gets the current speed of the robot

**(30 points)**

**CLASS DECLARATION AND ATTRIBUTES**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**DEFAULT CONSTRUCTOR**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**OVERLOADED CONSTRUCTOR**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**METHODS**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝

**METHODS CONTINUED (if needed):**

Answer is in: Pseudocode ⃝ C# ⃝ Java ⃝ C++ ⃝