CS 111 Lab 7: Recursive languages

20 points

Goal: **Test your understanding of recursion and ability to create a recursive language tester**

Only use recursion for these methods, do not use stack queues or arrays. You will have three empty methods as well as a main, all in one class, which will be provided to you. Write correct code for each empty method and they should return true or false, depending on if the input string is valid for that language

Part 1: Language 1 – 7pts

L = {w*w' : where w' is the reverse of w, where w does not contain the character '*', for all strings w with length >=0}

Valid Strings-

*	A*A	AbghA*AhgbA	AAb*bAA	

Invalid-

AA	A*a	Abd*Abd	abc$cba	A*

Part 2: Language 2 – 7pts

L = $\{A^nB^mC^l : n,m,l > 0\}$

Valid Strings-

ABC	AABBCC	AABCC	ABBBCCCC

Invalid-

AAC	BBCA	BBCC	AAAACCC

Part 3: Language 3 – 6pts

L = $\{A^nB^{2n} : n > 0\}$

Valid Strings-

ABB	AAABBBBBB	AABBBB

Invalid Strings-

AB	AABBB	A	B	ABABB

You must make sure you get the correct output when you run MYLanguageChecker.java file (according to the inputs already given in the main method).

For example: When you run the .java file, language 1 test output should be:

language 1 test:

true

true

true

false

false

Similarly, your code should return correct output for language 2 test and language 3 test.

Additional requirements:

- Name included at the top of your code
- Clean, readable, and commented code