CS300: Programming Languages

Spring 2022

Writing Assignment #2

- Name only: _____
- Release date: Feb 15, 2022 (Tuesday), 1:45pm
- Due date: Feb 22, 2022 (Tuesday), 12:30pm
- Type your answer below each question and submit WORD Doc. No handwriting.
- Assignment should be SUBMITTED on Blackboard before Due Date. Other submission methods will NOT be accepted.
- LATE Submission will NOT Be Accepted on Blackboard since the submission link will be closed automatically after due date;
  - Additional submission for missing answer will NOT Be Accepted.
- There will be NO re-submission if the student submitted the wrong assignment. So, please verify the uploaded assignment after the submission.
- It should be done INDIVIDUALLY; Show ALL your work and evidence to support your answers.
- Total: 10 pts

1. Some languages (e.g., C) distinguish between upper- and lower-case letters in identifiers. Other (e.g., Ada) do not. Which convention do you prefer? [1 pt] Why? [1 pt]

2. What is "Dangling else" problem in programming language? [1 pt]

3. If you were an educator of programming languages, how do you use Java code(s) to explain "Dangling else" problem to students?
   a. Write Java code(s) to demonstrate the "Dangling else" problem. [1 pt]
   b. Copy and paste the complete Java program here. [1 pt]
   c. Take a screenshot of program running result. [1 pt]

4. Considering the following grammar:

$$<S> \rightarrow <A> \ a \ <B> \ b$$
$$<A> \rightarrow <A> \ b \ | \ b$$
$$<B> \rightarrow a \ <B> \ | \ a$$

Which of the following sentences are in the language generated by this grammar? Write the derivation of generating the sentence. [2 pts]
You can use the symbol "-→" as derivation.

a. baab
b. bbbab
c. bbaaaaa
d. bbaab

5. Considering the following grammar:

$$<S> \rightarrow a \ <S> \ c \ <B> \ | \ <A> \ | \ b$$
$$<A> \rightarrow c \ <A> \ | \ c$$
$$<B> \rightarrow d \ | \ <A>$$

Which of the following sentences are in the language generated by this grammar? Write the derivation of generating the sentence. [2 pts]
You can use the symbol "-→" as derivation.

a. abcd
b. acccbd
c. acccbcc
d. acd
e. accc