25/2/2022, 10AM to 1PM. CS406-Compilers, Mid-semester Examination, Spring 2022. Max Points: 15

1. Consider the Language L_1 defined by the grammar G_1 :

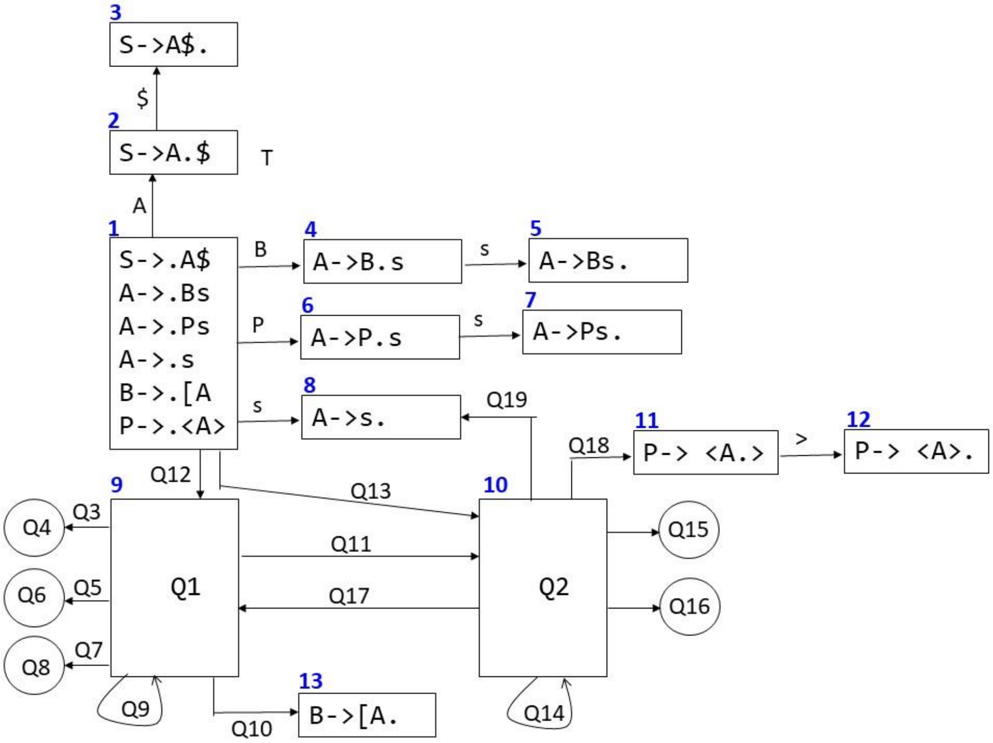
```
1. S -> A$
2. A -> Bs
3. A -> Ps
4. A -> s
5. B -> [A
6. P -> <A>
```

a. *Implement* a recursive-descent parser for the language L_1. The starter files are given to you, and you need to fill-in/code-in the answers. You must make sure that your code compiles and produces correct results i.e. accepts (rejects) strings that are (not) part of the language.

For this question, you need to write the answers in `1a.cpp, 1a.h,` and `makefile`.

b. Is G_1 `LL(1)`? Answer Y for yes and N for No (note that the answer must be capital letter). For this question, you need to write the answer in `1b.txt`

c. A partial LR(0) CFSM is shown below for G_1. Complete the CFSM by answering questions Q1-Q19 i.e., you need to fill states 9 and 10, mark the edges, and fill in the circles. The circles contain the state number of the state that the edge connects to (state numbers are shown outside the box at the top-left corner). For this question, you need to write the answer in `1c.txt`



d. Is the CFSM LR(0)? Why or Why not? (answer in not more than one sentence. Writing more than one sentence will attract penalty.) `)`? For this question, you need to write the answer in `1d.txt`