Q1) Consider the following grammar

$$E \rightarrow E+T \mid T$$

 $T \rightarrow F*T \mid F$
 $F \rightarrow id$

- a) What is the operation with the highest precedence? (1 grade)
- b) What is the associativity of the * operation? (1 grade)
- Rewrite the grammar to reverse the precedence of operations and associativity of the *
 operation. (1 grade)
- d) Rewrite the original grammar to make it suitable for recursive descent parsing. (1 grade)
- e) Rewrite the original grammar to make it suitable for LL(1) parsing. (1 grades)

Please scan your answers and upload the file.

Consider the following inference rule that is used by a type system _(3 grades

$$\vdash e_1 : T$$
 $\vdash e_2 : T$
T is a primitive type
 $\vdash e_1 == e_2 : bool$

Suggest the minimal (smallest) possible modification to the type system so that we can compare integers with floats.

Please scan your answer and upload your answer.

Q3) Consider the following grammar

$$E \rightarrow E+T \mid T$$

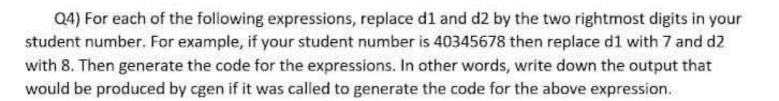
 $T \rightarrow F*T \mid F$
 $F \rightarrow id$

a) Design an NFA that recognizes all viable prefixes of the grammar. (2 grades)

(3 grades)

b) Convert the NFA into a DFA.

Please scan your answers and upload the file.



- a) d1+d2 (4 grades)
- b) if d1=d2 then d1+d2 else d1-d2 __(3 grades)

Please scan your answers and upload your answer.