Exercise Problems

- Problem where the product machine for PDA and DFA is constructed.
- If L is CFL but not regular, and R is regular, then is it possible for $L \cap R$ to be regular?
  - Answer for this is given towards the end.

Problem where the product machine for PDA and DFA is constructed.

- Create PDA for well formed parentheses language (Dyck set).
- What is your idea ?

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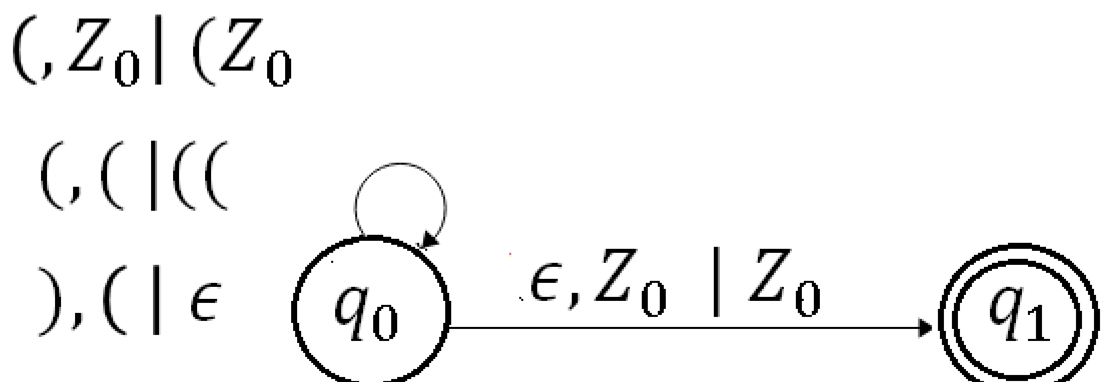

- Find DFA for $(^{*}\ )^{*}$
- Give transition diagram for this.

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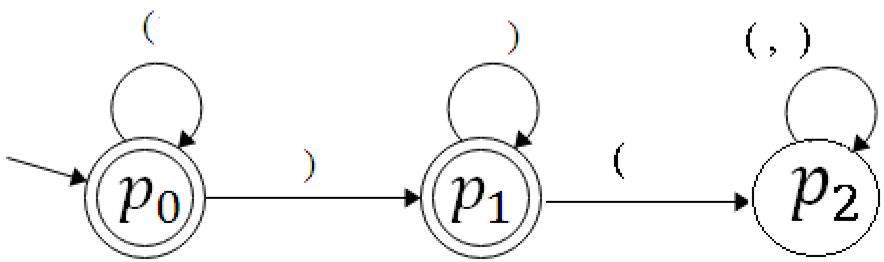
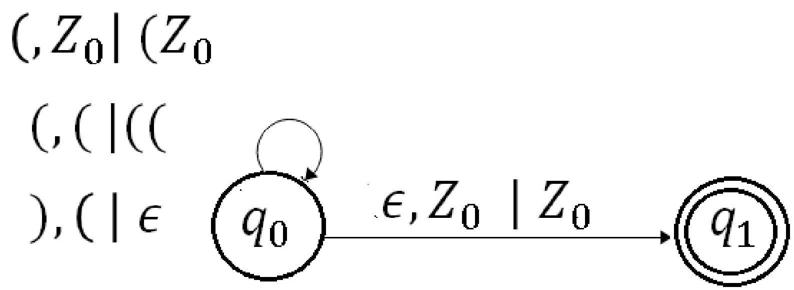
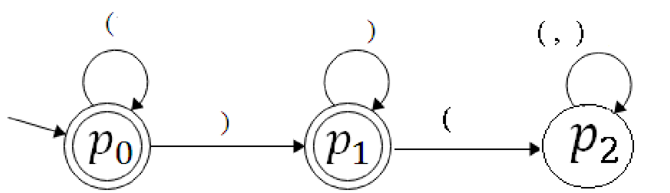


- Now create PDA for the intersection of the two languages.





Verify your solution

- Your answer should have six states with all relevant arrows added.
  - In the class what is given is only a partial answer.

- Your constructed PDA should recognize the language $\{\, (^k\ \ )^k \,|k \geq 0\}$.
- Verify ϵ is recognized by the product machine.
- Give ID seq. to verify ( ) is in, but (( ) is not in the intersection.

The second question -- answer

- If L is CFL but not regular, and R is regular, then is it possible for $L \cap R$ to be regular?
- Yes. It is possible.
- Take for example $L = \{a^k b^k | k \geq 1\}$ and $R = \{a^l | l \geq 1\}$.
- There intersection is empty which is regular !!