Homework Assignment 5

1. Give a PDA that recognizes $L_1 = \{a^i b^j a^k \mid j = i + k\}$. Hint: Try replacing $j$ by $i + k$ in the set builder expression. Do not convert a CFG into a PDA.

2. Give a PDA that recognizes $L_2 = \{a^i b^j \mid j = 2i\}$. Do not convert a CFG into a PDA.

3. Show that the following PDA rejects string $aaba$; give the answer as the reduction graph we used in class.

4. Derive a PDA from the following reduction graph.

5. Convert the following CFG into a PDA.

$$S \rightarrow AB$$
$$A \rightarrow aAb \mid \epsilon$$
$$B \rightarrow bBa \mid \epsilon$$