

# Assignment #1

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Design Push Down Automata for the following languages:

1.  $A = \{w \mid w = \{a, b\}^* \text{ and number of } a\text{'s and } b\text{'s are equal}\}$ , Consider  $\Sigma = \{a, b\}$
2.  $A = \{w \mid w = \{a, b\}^* \text{ and number of } a\text{'s and } b\text{'s are not equal}\}$ , Consider  $\Sigma = \{a, b\}$

*Hints for question number 1 & 2, these machines will accept any string of symbol 'a' and 'b' in any combination. There are no restriction of which symbol will come first or which will come last. Remember that  $\{a, b\}^*$  means star operation of symbol 'a' and 'b'.*

3.  $A = \{a^i b^j c^k \mid \text{where } i - k = j \text{ OR } i + k = j \text{ and } i, j, k \geq 1\}$ , Consider  $\Sigma = \{a, b, c\}$

## Assignment submission guideline:

- ✓ Draw the models in a white paper. Write your name and ID on the top of the paper.
- ✓ Take a picture of your models, then convert your picture into 'pdf' format.
- ✓ Name of your 'pdf' file should be your AIUB ID.
- ✓ Make sure that, the drawing and the picture, both are fresh and clear. So that I can read it properly.
- ✓ I will give you a link, upload your 'pdf' file there.
- ✓ Assignment submission date is 14/7/2021, 11:59 PM. After that, your link will be disabled, and you cannot upload anything.
- ✓ You can upload one file. Make sure you upload the right one.
- ✓ If you fail to upload it in time, or upload a wrong file, or mistakenly click the upload button without selecting a file, then it is your responsibility. Submitting the assignment properly is a part of the assignment, remember that.