1. The CFG for the language E over the alphabet LN, E = {w | w has equal number of at least two different symbols from LN}. I will provide the JFLAP notation below as well as 3 strings that are accepted by the language and 3 strings that are rejected.

**JFLAP**

Table

Description automatically generated  
  
**3 Accepted Strings  
Text

Description automatically generated with medium confidence** **Graphical user interface, application

Description automatically generated** Graphical user interface

Description automatically generated with medium confidence **3 Rejected Strings  
Graphical user interface, application

Description automatically generated** **Graphical user interface, application

Description automatically generated** Graphical user interface, application

Description automatically generated

1. Using the alphabet LN = { a, s }, I will give a PDA for the language NE where NE = {w | w has unequal number of a’s and b’s}. I will also run my PDA in JFLAP with 3 strings that accept the language and 3 strings that reject the language.

**JFLAP**  
Diagram

Description automatically generated **3 Accepted Strings**  
Rectangle

Description automatically generated **Rectangle

Description automatically generated** Rectangle

Description automatically generated  
**3 Rejected Strings  
Rectangle

Description automatically generated with medium confidence** **Background pattern

Description automatically generated with medium confidence** Rectangle

Description automatically generated with medium confidence

1. We will be converting the grammar S -> aSb | bSa | SS | E, where a and b are defined as {s, a}. All steps are shown below.  
     
   Text, letter

   Description automatically generated