



**Tecnológico
de Monterrey**

Manual Proyecto Final Matemáticas computacionales

Profesor:

Dr. Iván Guerrero

Integrantes:

Luis Juan Centurión A01650501

Ernesto Iván Ochoa Hidalgo A01651425

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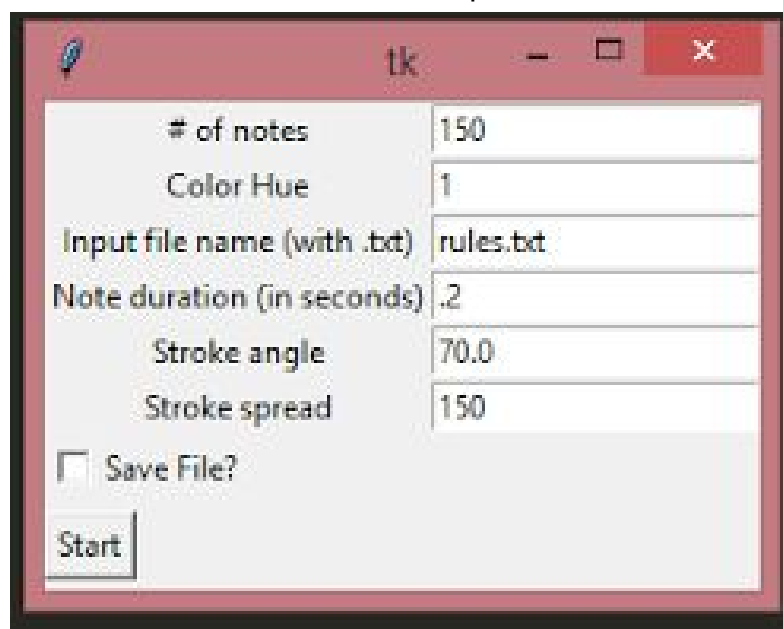
Introduction:

The program “RETS”(Regular Expression To Song) is a program created by Ernesto Iván Ochoa Hidalgo and Luis Juan Centurión that let's you create a random song with regular expression rules specified in a .txt file, this project was built using python.

Instructions:

Running the program

Just like any python script run it using a console with Python already configured, to avoid errors we recommend you download version 3.x.x or higher, once that is done, open your command line and get to the location you stored the program, once in there write “runner.py” on your console, this will run the script with a graphic user interface and will show a window with various options.



- # of notes will allow you to put the quantity of notes you choose
- Color hue allows you to pick the color spectrum, we recommend from 1 to 20 to avoid overflows
- Input file name allows you to pick the text file with your personalized rules
- Note duration allows you to control de note duration of the notes on the song

- Stroke angle allows you to control the angle of each line of the drawing generated
- Stroke spread lets you control the distance traveled by the lines of the drawing
- Save file allows you to choose to save or not the image generated at the end of the drawing

To run the program without trouble your file must be in the following format and the “*fin*” line must be always added, if the program has problems reading the text file, please check there are no spaces at the end of each line.

Rule examples

$$\begin{aligned}
 G &= gF \\
 A &= f\#F\# \mid c\#C \mid cC\mid eF\# \\
 F\# &= aA \mid bB \\
 &\dots
 \end{aligned}$$

On the left:

The non terminal symbol.

On the right:

A terminal symbol followed by a non terminal symbol.

Leave no spaces in any line.

Only rules added in this format will work.

Non terminal symbols:

- F
- F#
- G
- G#
- A
- A#
- B
- C
- C#
- D
- D#
- E
- P

Terminal symbols:

- f

- f#
- g
- g#
- a
- a#
- b
- c
- c#
- d
- d#
- e
- p

Where p is silence

Changing the instrument

RETS currently features 2 other instruments that can be used instead of the default bass sound, piano and voice.

In order to use piano notes instead of the default simply add an “o” before any note, for example the note C produces the default bass sound when written like so:

$$C = cC$$

The piano sound will be played if written like so:

$$C = ocC$$

Likewise the voice sound will be played if written:

$$C = vcC$$