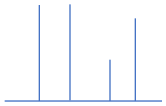
Pasang Sherpa

Project Report

I was always fascinated by the tall buildings around the world. Now a days the tall buildings are being built in many numbers and much faster. So, I also decided to take this journey of building a tall building but just not in the real world. When I choose my project of city art generator, I was very excited since I was getting an opportunity to express my art skills through my understanding of programming in Ocaml language.

I started by learning the Cairo library that I was using to accomplish the goals. Cairo library was very interesting. The functions it has such as stroke, fills and rectangle made my project simple in sense that it was almost like a painting in a real life. The slightest issue with the library was that in the internet there wasn't many examples especially with ocaml Cairo binding. I found helpful ideas from the tutorial that the CairoOcaml provided and from there onwards everything was all about mistakes and learning and more mistakes.

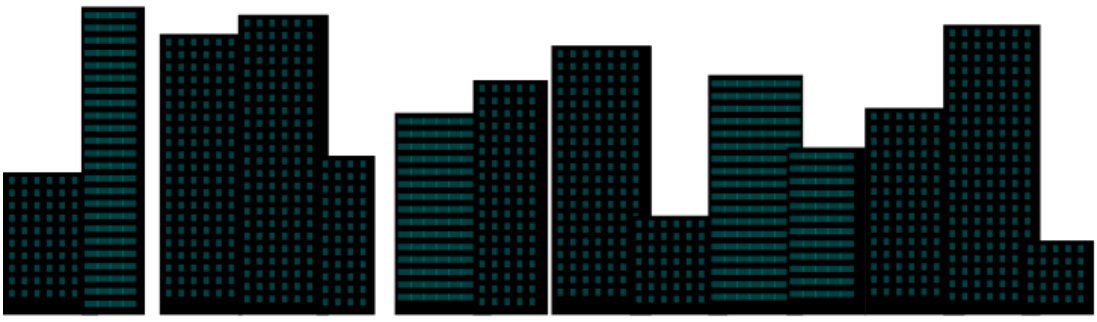
My first approach of the project was to use lines to draw the buildings and to draw those lines you must know the x and y coordinates in the graph. By using the lines to draw I later realized it was taking long time. I had to connect those line so the number of lines of code was getting larger. Step 1:



I moved to drawing a rectangle which was game changer. It was faster, less lines of code. Instead of getting three different coordinates to draw one building it only took one coordinate and the width and the height of the rectangle created the shape of building. After successful creation of

building I drew couple more to see how it looked without any other description such as windows in the building. Step 2:

Learning how to draw windows in a scale of number of apartments and number of floors was quite challenging. The library function called Cairo.translate was interesting and complicated at the same time. Some of the important or the core part of the codes that made it all possible was as follows: 1) Cairo. Rectangle, 2) Cairo.save, 3) Cairo.restore, 4) Cairo.translate. Along with these functions there were others which filled the rectangle with the colors. For my project to be able to generate different art of the cities, I had to build a random_float function which took two argument x and y where x is min and y was the max. I have one nested for loop which I tried my best not to use it, but I wasn't able to make it work with any pattern matching recursion function. I have helper function to build windows and the roofs. I had a most hard time figuring out the roof function. I tried making few different types of roof, but it wasn't successful, and I will still be working on it to make it work for the future.



Overall, I am very happy with what I was able to accomplish through my understanding of ocaml programming language with Cairo library. It was a good programming experience because it was new and a fresh experience for me. I can see myself working more on similar project or even more complicated ideas and only get better.