Name: Gulnaz Serikbay

Project name: Paint By Numbers

**Project description:** The program will generate the Paint by Numbers version of the input image and allow the user to download the generated image. Also, it will feature a graphical interface where user can paint the coloring images online and output the digitally colored image.

* **Competitive Analysis**: PBNify by Dan Munro and paint by Number generator by a github user drake7707 are similar projects. PBNify allows a user to choose the color palette; my program will create the palette on its own given the number of colors. The second project is written in JavaScript, TypeScript languages and both use different border detecting and clustering algorithms. The interfaces are web pages for both, I’ll be implementing in Tkinter.
* **Structural Plan**: A structural plan for how the finalized project will be organized in different functions, files and/or objects.

I’ll be using class structure to separate the functionality: PBN class: color clustering, border detection and numbering; GUI1: conversion interface; GUI2: painting interface. All program files will be stored in a folder, the files will be separated according to their functionality. Test images will be stored in a folder inside the main folder. Also, for painting online, user will be able to choose the coloring image from the list or , those images will be stored in a separate folder as well.

* **Algorithmic Plan**:

floodfill - blur - color clustering, border detection, numbering the cells, tkinter painting

I used floodfill algorithm to convert the image into the clustered version. Other: image processing algorithms, etc.

* **Timeline Plan**:

18.11.20 - basic interface, class structure implementation, manage the palette colors

20.11.12 -PBN conversion complete, clustering algorithm(side)

24.11.12 - TP2 - MVP PBN conversion, interface, basic painting interface

28.11.12 - added features - user can paint

* **Version Control Plan**: A short description and image demonstrating how you are using version control to back up your code. **You must back up your code somehow!!!**

I’ll upload my code to Github public repository

* **Module List**: A list of all external modules/hardware/technologies you are planning to use in your project. Note that any such modules must be approved by a tech demo. If you are not planning to use any additional modules, that’s okay, just say so.

**PIL, tkinter**

TP2 UPDATE:

Algorithm: +rgbtohex converter

Structural plan:

GUI1 - Main page class

GUI2 - PBN generating, painting classes

processing.py - backend (Processing class)

images - input images, outputs - output images

Timeline plan:

24.11.20: Tasks achieved

27.11.20: Try implementing painting bucket, better interface and connection between the windows, file saving optimization

29.11.20 - added features+main features+testing