DS PROJECT

FLAPPY BIRD

Jash - 21 Kashish - 22 Manthan - 28

PROBLEM STATEMENT

To implement the famous game Flappy Bird using data structures in python like lists,dictionaries and binary search trees.

Data Structures Used

LIST

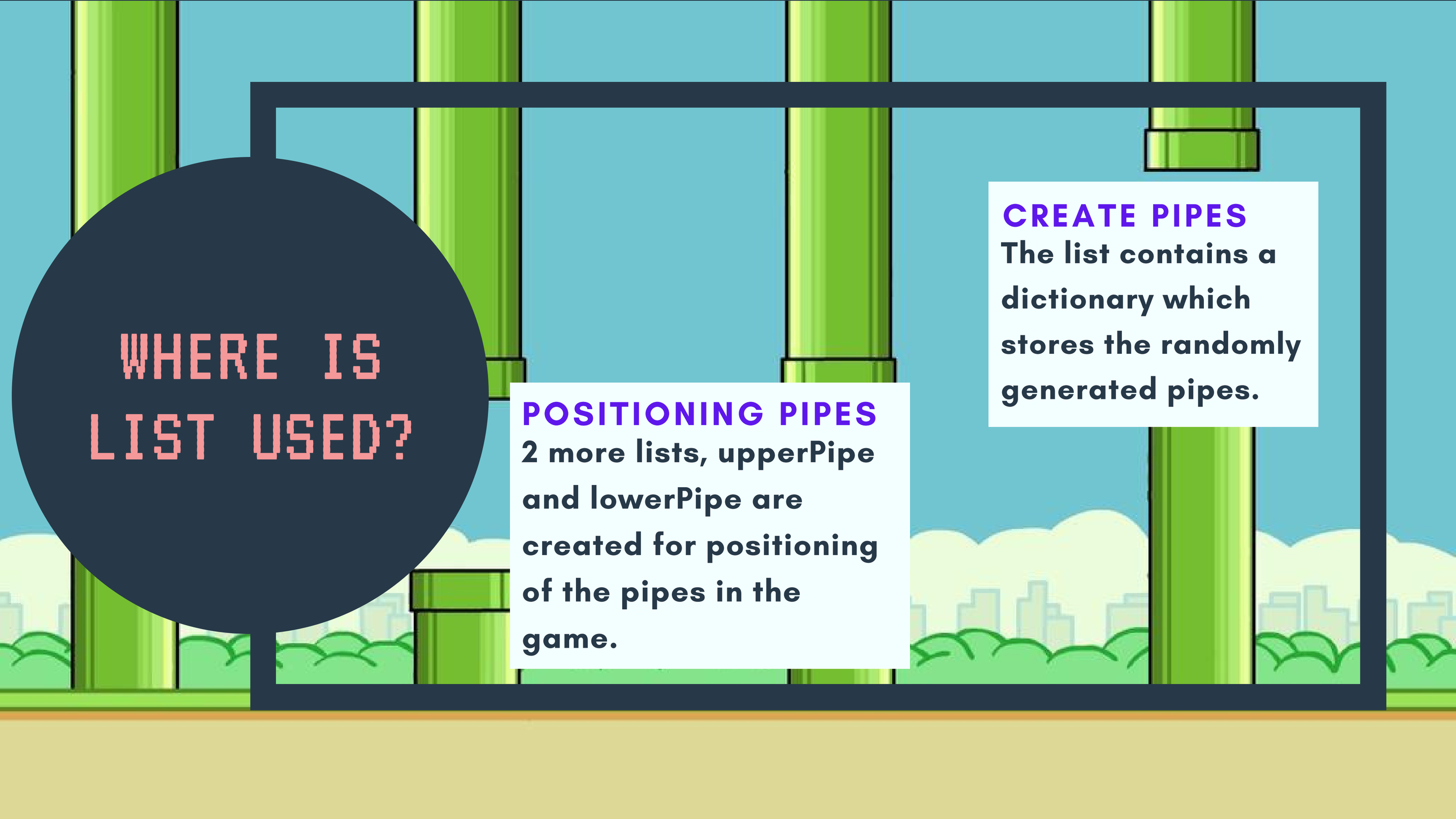
Lists store elements of different data types which can be accessed by their index number.

DICTIONARY

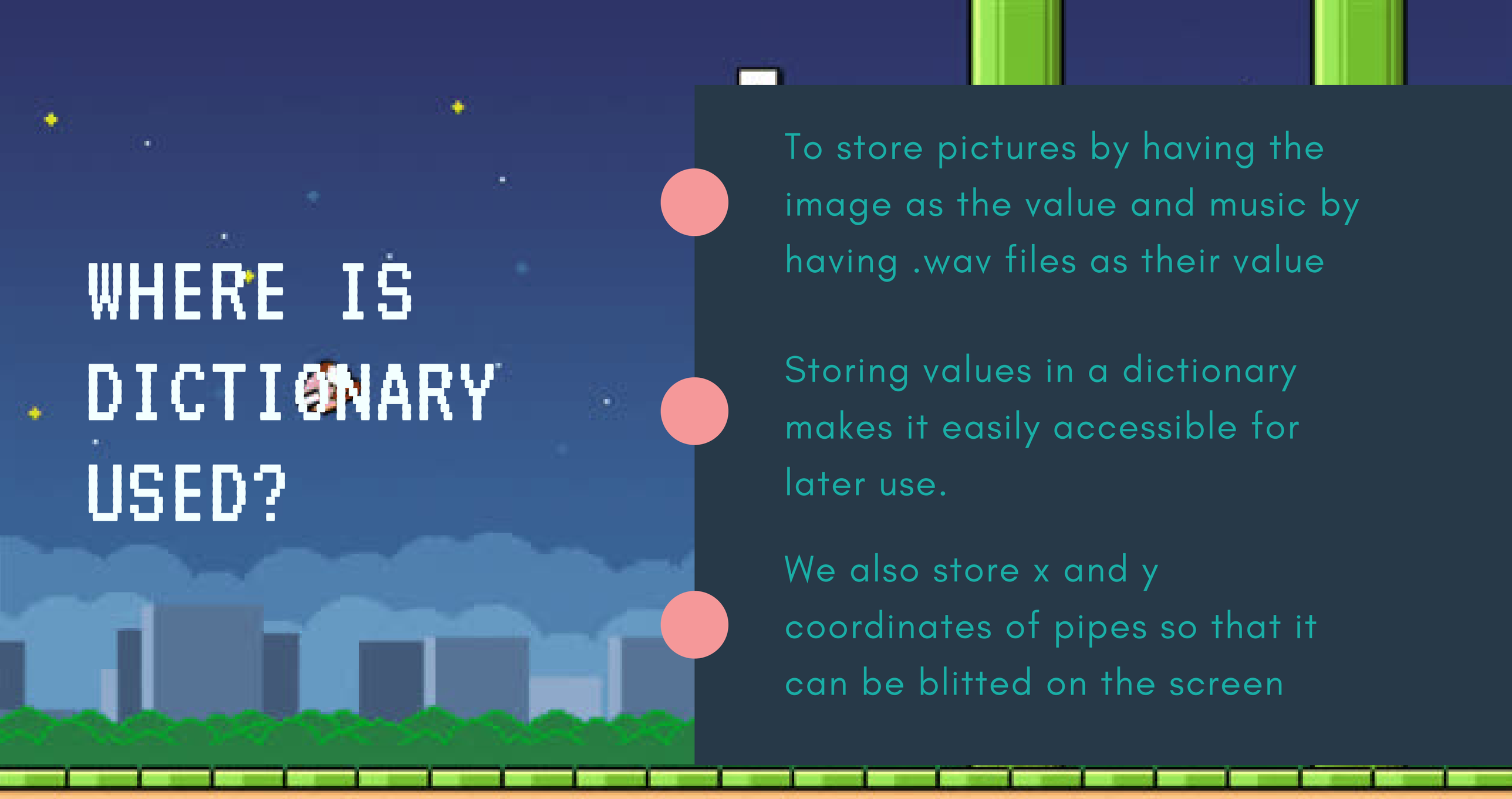
Dictionary is a data structure used to map an item to a value or a tuple. It is unordered

BINARY SEARCH TREE

BST stores the numbers in an sorted way and it makes the elements easy to find and also print in descending order


WHERE IS LIST USED?
POSITIONING PIPES
2 more lists, upperPipe and lowerPipe are created for positioning of the pipes in the game.
CREATE PIPES
The list contains a dictionary which stores the randomly generated pipes.

WHERE IS DICTIONARY USED?



- To store pictures by having the image as the value and music by having .wav files as their value
- Storing values in a dictionary makes it easily accessible for later use.
- We also store x and y coordinates of pipes so that it can be blitted on the screen

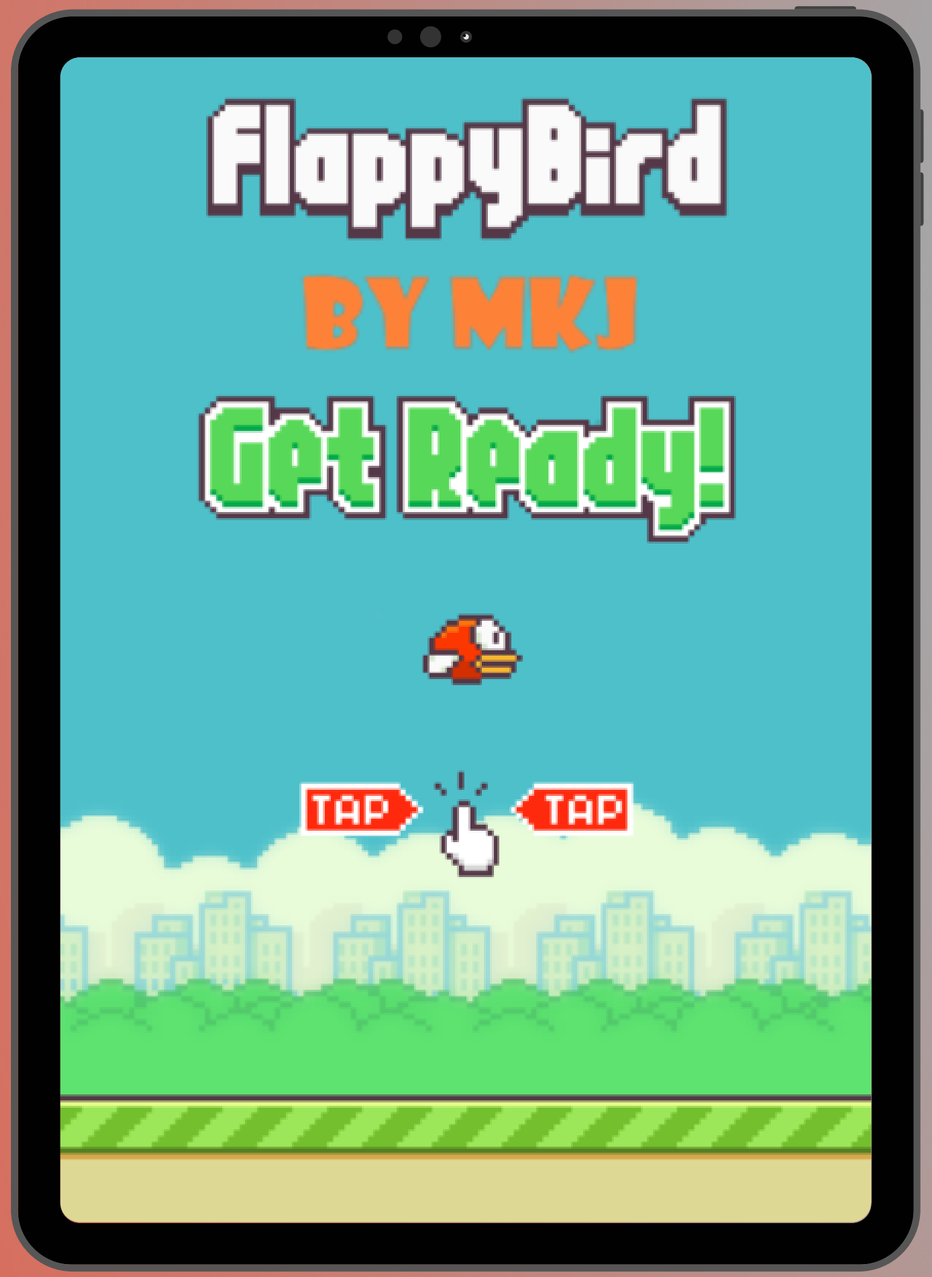
BINARY SEARCH TREE

A binary search tree is a hierarchical data structure in which each node has at most two children generally referred as left child and right child.

LEADERBOARD

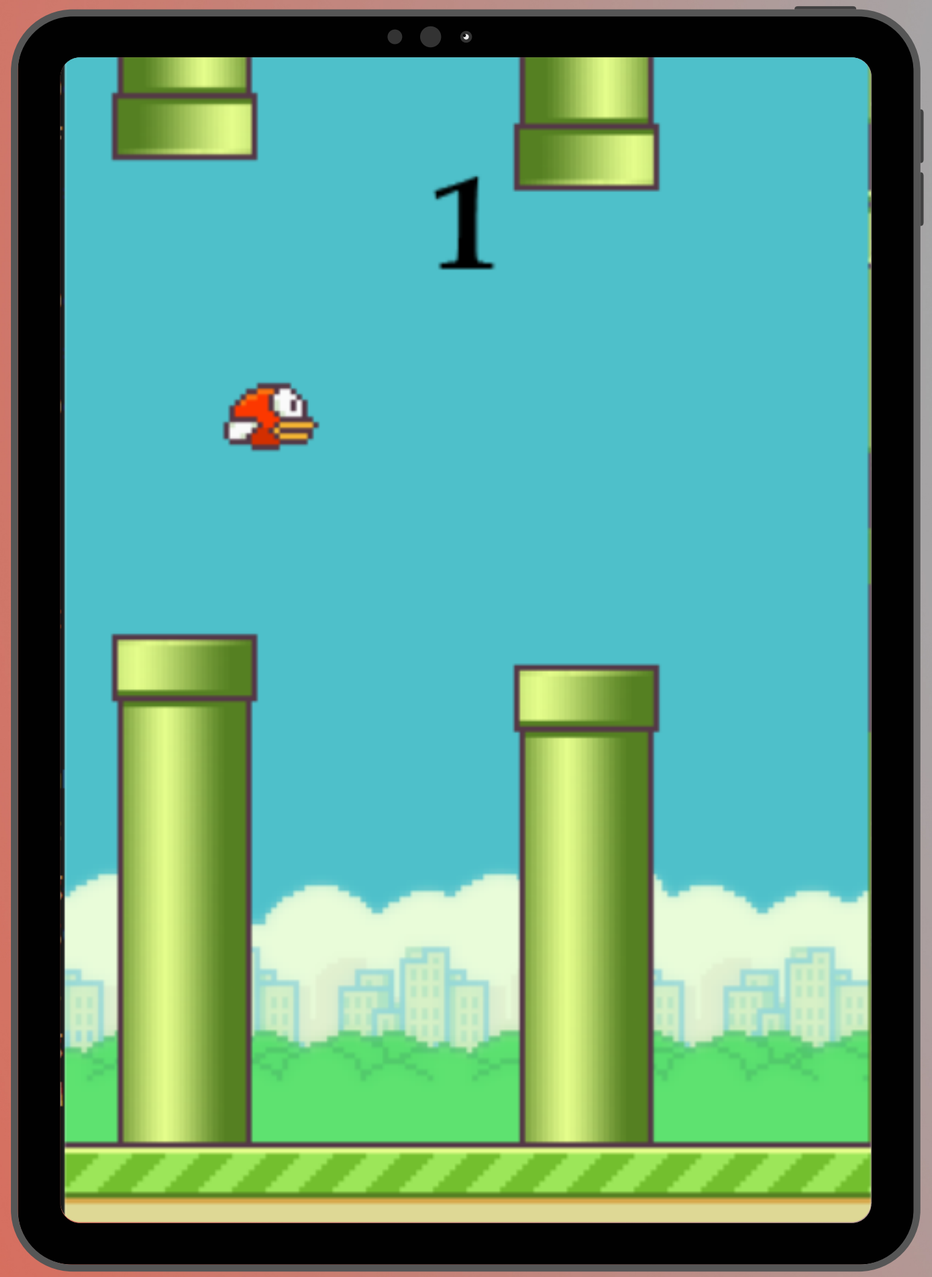
The binary search tree is used to implement the leaderboard as it stores the values in a sorted order. This helps us in accesing the 5 higheest values very easily and reduces computation time.

WHERE IS BINARY SEARCH TREE USED?



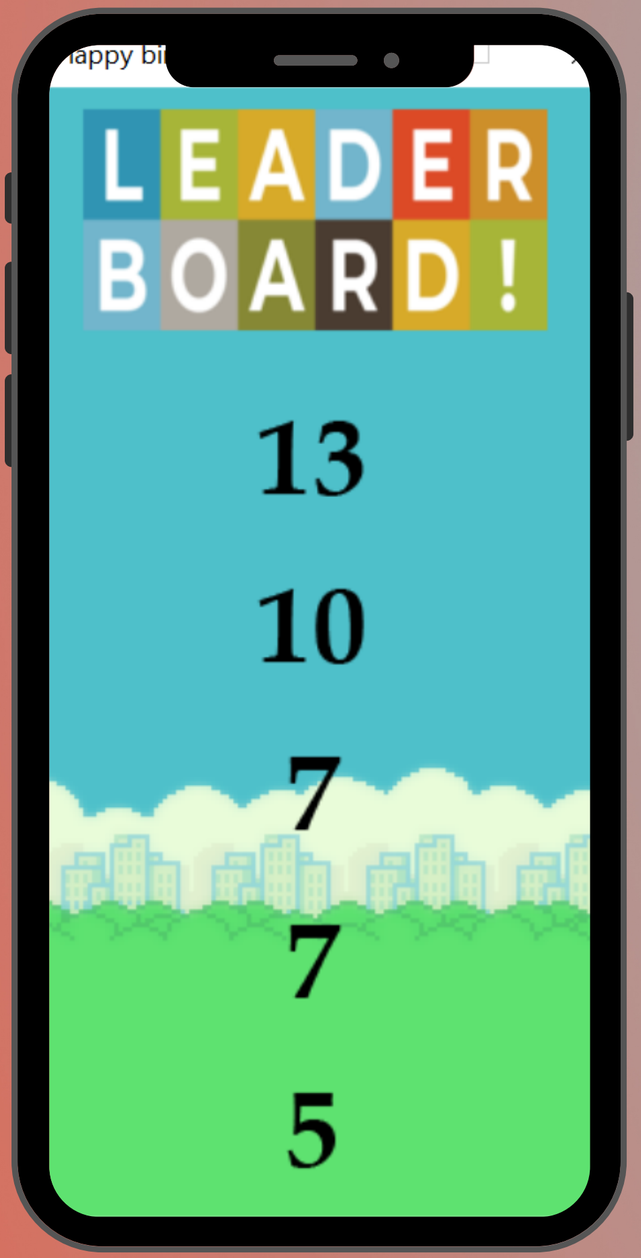
WELCOME SCREEN

The welcome screen has many components.
The player image, background image and base image are incorporated.
The esc key is used to end the game.
On pressing space bar or upper arrow key the control shifts to the main game and the game starts.



GAME SCREEN

In the game screen the user would move up and down depending on the flaps and the goal is to avoid the pipes.
Sounds are also used and the user feels the bird is moving forward whereas in reality we are blitting the pipes, whose height is randomly generated into the screen with a negative velocity . When a pipe is successfully midway crossed the score increases.



LEADERBOARD SCREEN

On the leaderboard screen we display the top 5 previous scores in our older runs.
To implement this functionality we use a binary search tree to store the previous scores
We use this tree to get the top 5 scores.
It is used to get the scores as a binary search tree stores the scores in a sorted order.

QUESTIONS?