CS 154 Project Report

Subway Surfers

Names of Students

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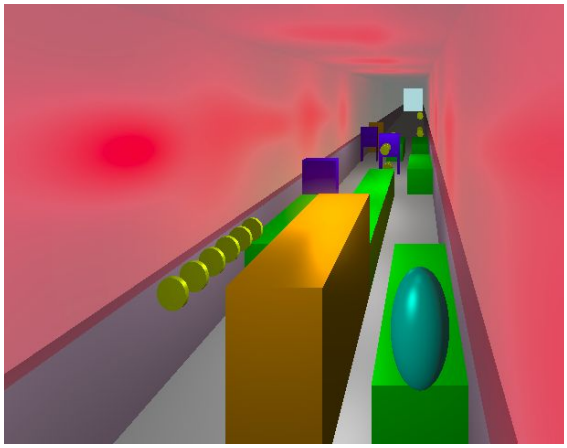
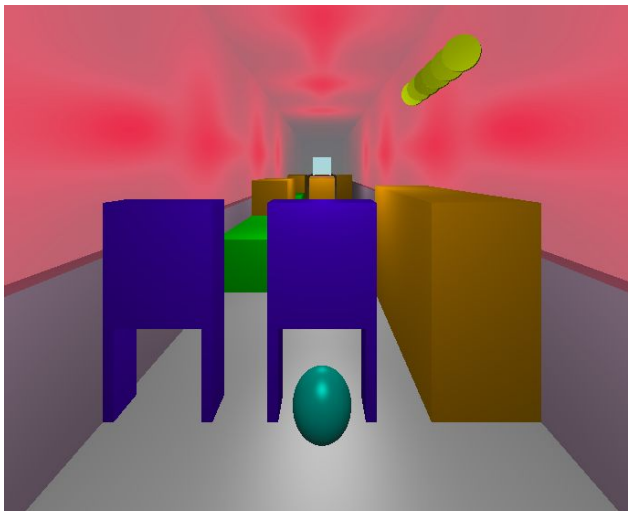
Description

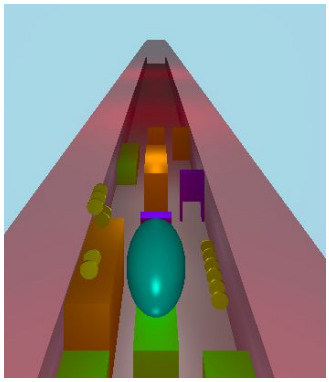
We had implemented a 3D sound-effect graphics game in which the user controls a ball (sphere) by jump,slide, move left and right among the 3 paths and collect the coins. The main aim of this project is to make a game like Subway Surfers.The main concept is to send the obstacles in such a way that there is at least one possible way to survive, learn other exciting libraries of Racket , synchronise this code and depict in 3D graphics.We had used objects, state, graphics, lists and mutable lists.We had used pict3d , pict3d/universe,2htdp/universe, racket/gui, compatibility/mlist and rsound.



Jumping



Sliding



Flying

Design of Program

Our execution process is done by using big-bang3d function provided by pict3d/universe. It creates a window in which the state of the world is described in the form of 3D objects.

1. A single file project.rkt including everything needed and a picture for displaying.A single file must be used due to too much use of state variables and implementing “set!” which cannot be done to variables of another file.
2. We have maintained three global variables (x, y, z coordinates) which represent the instantaneous position of the ball and also three mutable lists corresponding to either there’s a obstacle or type of obstacle.This list consists of elements 0, 1, 2, 3 corresponding to no obstacle, slide through, jump and 2nd level obstacles respectively. We had here taken care of the case of at least one survival.
3. Similar to the object lists, we have made three coin lists. We had taken care of that coin should not be at a position where an obstacle exists.(So that it can be collected).Also the coins got disappeared as soon as they were collected.
4. A special coin called jetpack is there for flying.
5. We had also used rsound package to produce sound when coins are collected.

Sample Input and Output

- The user initially gives his name then some button clicks which lead to the big-bang3d function and thereafter the game starts.
- Input is taken in form of keyboard keys (arrow keys) and spacebar (used to pause the game).

- The output is shown in the form of movement of the ball.

Limitations and Bugs

1. Time delay between collision and stopping the big-bang3d loop. This is irremovable since there exists a series of statements to be executed. Hence you would see the ball going into the obstacles.
2. Limitation of constant speed: We could not increase the speed of arrival as it would require skipping over list values, which is just loss of data. The speed fluctuates dynamically in the program due to runtime executions.
3. Arrow key input requires function call which execute INSTANTANEOUSLY independent of current flow of control. Hence, certain issues generate due to change of control and then falling back to previous location.
4. The windows created by big-bang3d could not be closed. There is no function to close without exiting. Hence while choosing “Play again”, a new window is created while the previous still EXISTS. However when exit is pressed it closes all the previously existing big-bang3d frames and disables the interactions.
5. Continuous pressing of down/up keys will result in input commands being forwarded to much later times. Hence you will see the result upto some time even if you stop pressing.

Other points of Interest

1. One of the major tasks was formulation of problem and deciding upon the model. Converting a game and just by looking at the physical aspects, modelled it to produce a game quite similar to Subway surfer.
2. Using finite but lists of dynamic length to model infinite trial of obstacles.
3. Effective use of pict3d
4. rsound can be used to provide sound effects. Our program has sound effects however background music not given due to lack of appropriate music :-) :-). Sound can be heard in coin collection.