MDU113.3 Practical Assignment
(Procedural Generation)

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Game Theme.

This is a top-down tank based shooter game I made by combining the task for MUD112.3 and MDU113.3. Game called “Get Wrecked” due to its game play style, combat system and the quickness required to evade the enemy attacks. The game mechanics, controles are made very similar to generic tank control system. The level-generation in this game is completely procedurally generated on the fly.

Game Controls.

The utilises generic controls which can be mostly seen in simple 2D games run on pc.

R button = reset the game level,
J button = quit the application,
W button = forward acceleration,
S button = backward acceleration,
A button = turn left,
D button = turn right.
Mouse Button 1 = FIre button.

Things Learned.

The level generation system used in this game called as the walker algorithm. The walker algorithm was first implemented in the game called Nuclear Throne by Vlambeer Studio.

The walker algorithm works as follows. For the algorithm the primary requirement is the two-dimensional list grid which should be of an enumeration type to record the level generation tile type information.

On initializing we create one walker at the centre of the grid, then moves the walker in a random direction based on a percentile value called direction-change value. The tile type that the walker is on will be made to the enumeration type of floor-tile.

The next section of the program deals with the creation of new walkers. A list called walker list deals with the inclusion and removal of walkers. The program checks if the current walker count is less than the desired max walker count. If so the program generates a walker at the position of

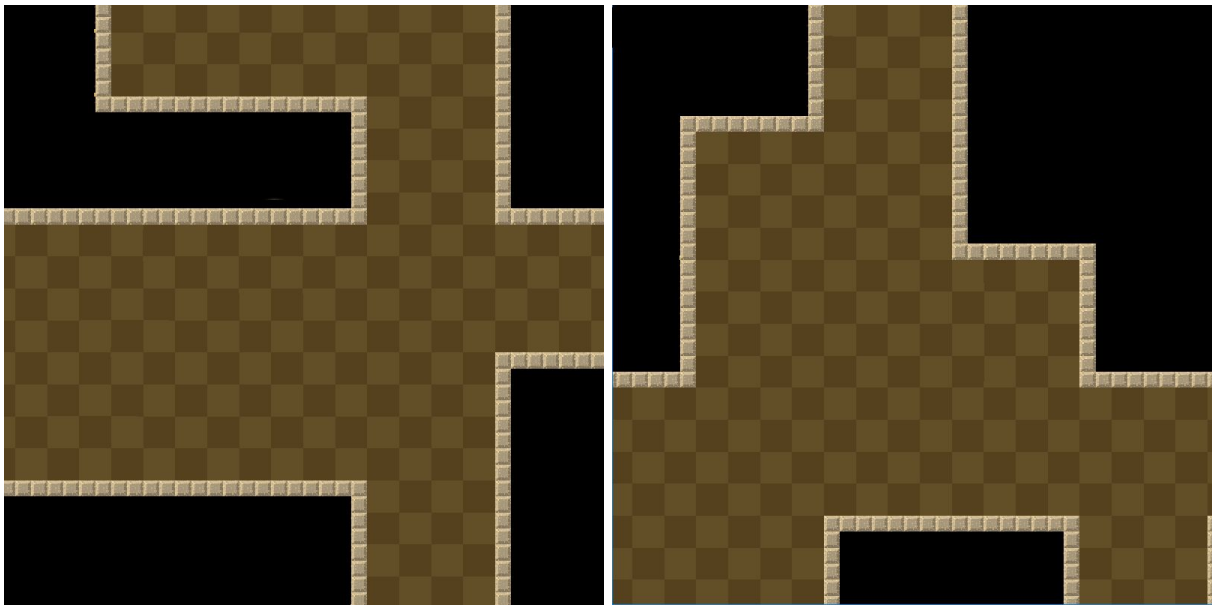
a currently existing walker and manages it in the next frame onwards. The creation of the walker is controlled by a chance based system using a variable.

Next comes the section of the programme which manages the removal of an existing walker currently creating the scene tiles. If the walker list count is greater than one then the program removes a random walker from the walker list which is also controlled by a chance based percentile system to provide even more randomness.

As all this is in a while loop when the count reaches the max-action count variable, the level generation stops and the program starts the placement of floor tile sprites on to the game window.

For to do this the program goes through the elements of the scene grid and the once who are marked floor tile the function places a floor tile sprite. After this the program finds the sides of the tile and places the walls and corners to it.

Sample level images :



Extra Achievements.

For to earn extra credits points I have achieved A* pathfinding for the enemy entities, use of costume sprites and have used frame based animated sprite based particle effects. The game play is accompanied by a free music as well which is called ‘"8 Bit Scrap!" Fast Fun Battle Music by HeatleyBros’

References.

Adobe Inc.(2012). Photoshop CS6[Windows PC]. California : United States.

Adobe Inc.(2018). After Effects CS6[Windows PC]. California : United States.

Tissot, B. (n.d). 8 Bit Scrap.[Audio file]. Retrieved from https://www.youtube.com /watch?v=ay-ccm07XmU