

Project name:

Tunnel Rush- programmers addition

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Introduction:

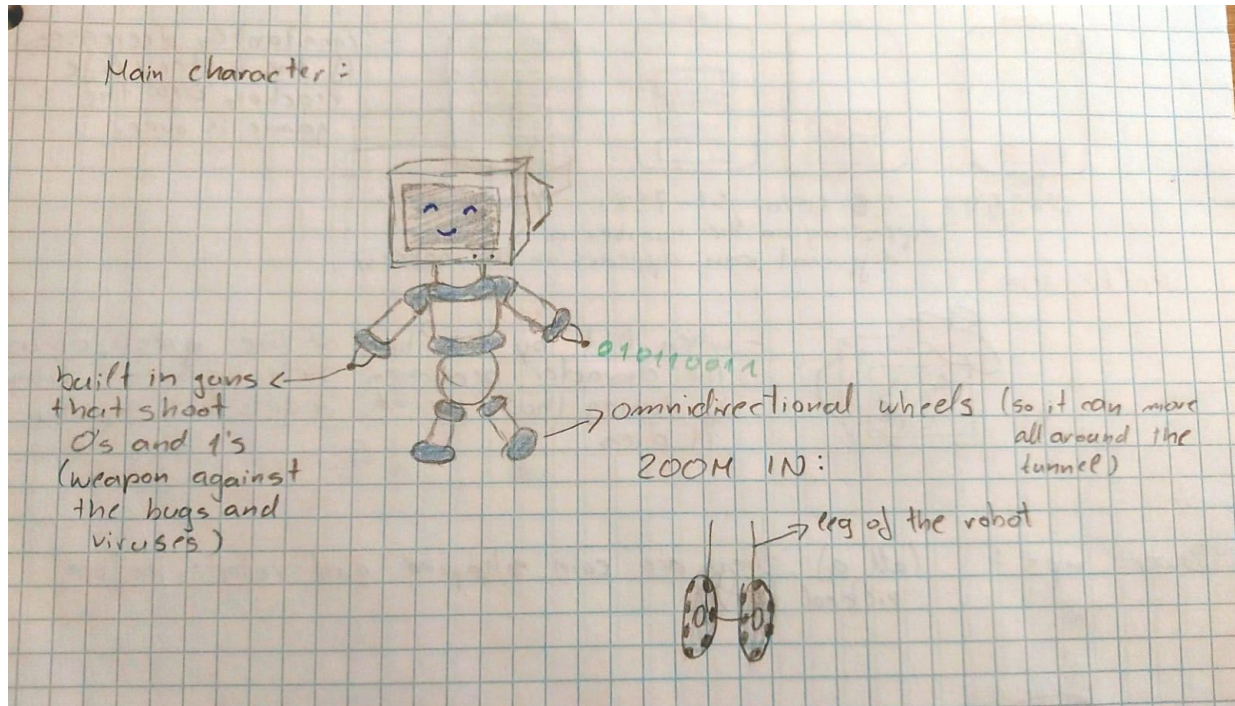
This project is inspired by the game Tunnel rush whose main goal is to avoid traps for as long as possible while moving through a tunnel.

Our goal is to make the game a bit more interesting by adding features like power-ups, enemies and a weapon to eliminate them, forking the tunnel, etc.

The main engine used for this game will be Godot, and the whole project will be written in GDScript.

FEATURES:

Main character:



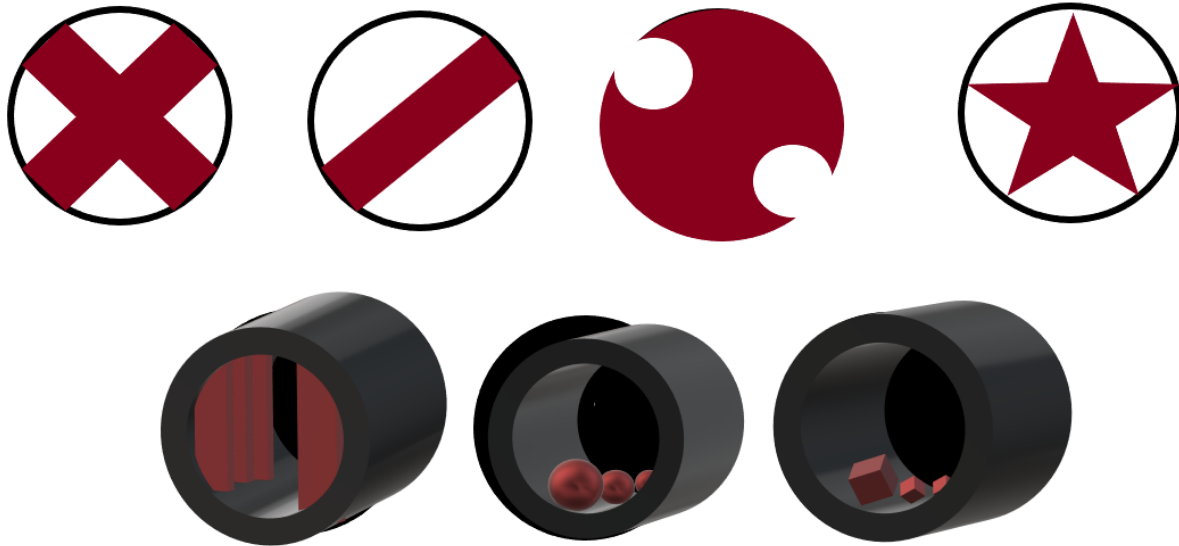
As seen on the poorly drawn picture above, the main character (named Hans), will be a white-blue robot with an old computer monitor as a head.

Its “hands” will have built in guns (or lasers per say), that will shoot a green array of 0's and 1's (the numbers are reproduced randomly). This feature will be activated by pressing the space bar on the keyboard ; by pressing it once it will shoot a short laser beam (length to be specified). The beam will then travel at a certain speed to the target (or disappear into the tunnel if the player is a bad shot). Note: To shoot multiple times, the space bar has to be pressed again, continuous shooting will not be possible by just holding the key down.

The “feet” of the robot will be omnidirectional wheels that would allow it to move throughout the whole circumference of the tunnel ¹.

¹ To clarify, during the game, the character will not be moving around the tunnel, but for the player it will rather seem as the tunnel itself is rotating (more on this later).

Traps:



If we look at the picture, the first row is represented by the traps that will be fixed to the walls of the tunnel, i.e. to avoid them we need to move Hans to the safe spot (white parts of the traps seen above).

First trap in the second row of the picture is simply a series of walls that close up (and again open), each row moving with a small delay compared to the previous one (in the picture there are only 3 such rows represented, however in the game there will be 7 of them).

Second and third traps seen in the second row of our picture are representing balls/squares, moving in a spiral formation one after the other (similarly to the first trap, there will be 7 serving as 1 trap).

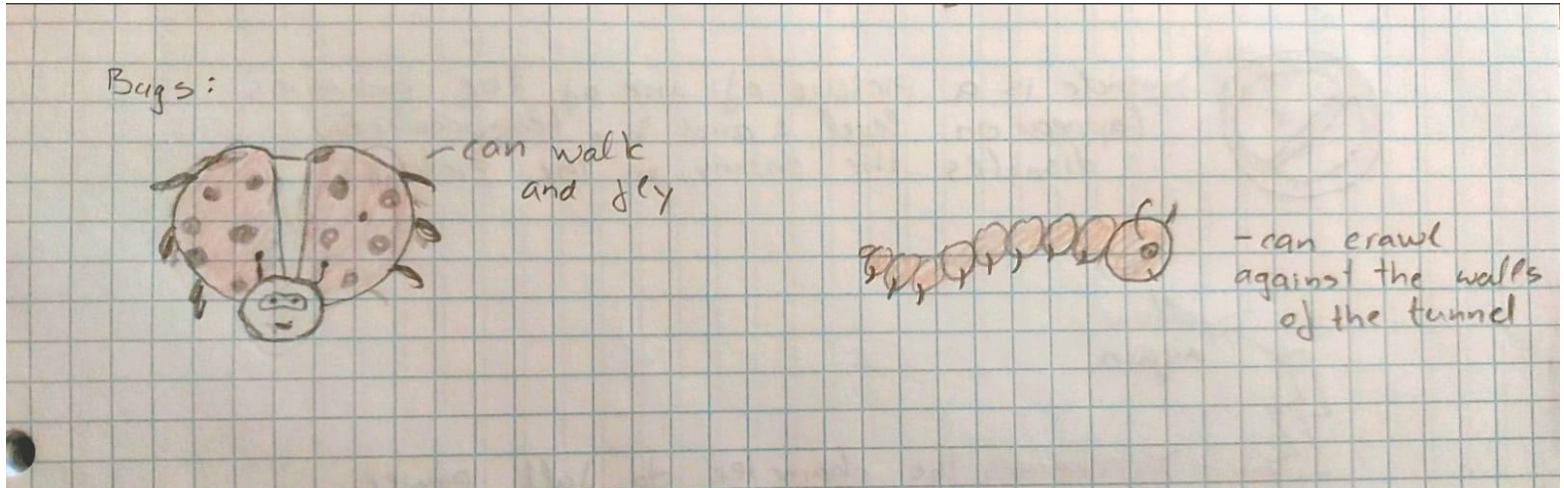
These traps will be reproduced randomly throughout the game. Nevertheless, the goal is not to make the same trap appear twice in a row.

Even though they aren't described above, more traps similar to the first row will be added.

Note: Traps cannot be eliminated by shooting at them, you can only dodge.

Enemies:

Bugs:



As seen on the drawing, there will be 2 types of bugs :

- Worm that can only walk around the tunnel
- Ladybug that can both walk and fly through the tunnel

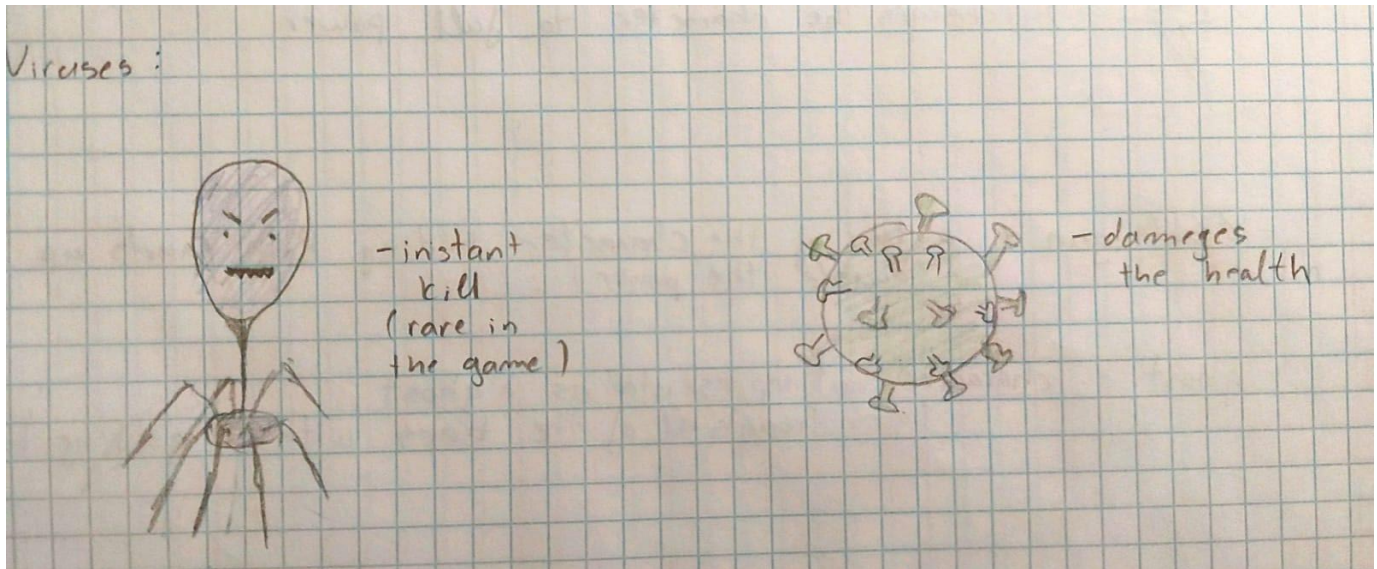
Both of them can only move in the forward direction and can be killed with the lasers that Hans has (number of shots needed is to be decided). However, the killing is not necessary. The bugs will generally try to move in Hans's direction (or to be more precise, align with him rotation wise), but if the player is quick enough, they can simply move away at the last moment, and the bug will just pass by.

This behaviour is somewhat similar to the last 2 traps we saw on the previous page. However, unlike the bugs, taps will not tend to align with Hans, but will have a fixed direction of the rotation (clockwise).

If a player doesn't successfully kill or dodge a bug, the energy level will drop by one bar immediately. (Note: if this was its last bar, the game is over)².

²We will find out more about energy soon.

Viruses:



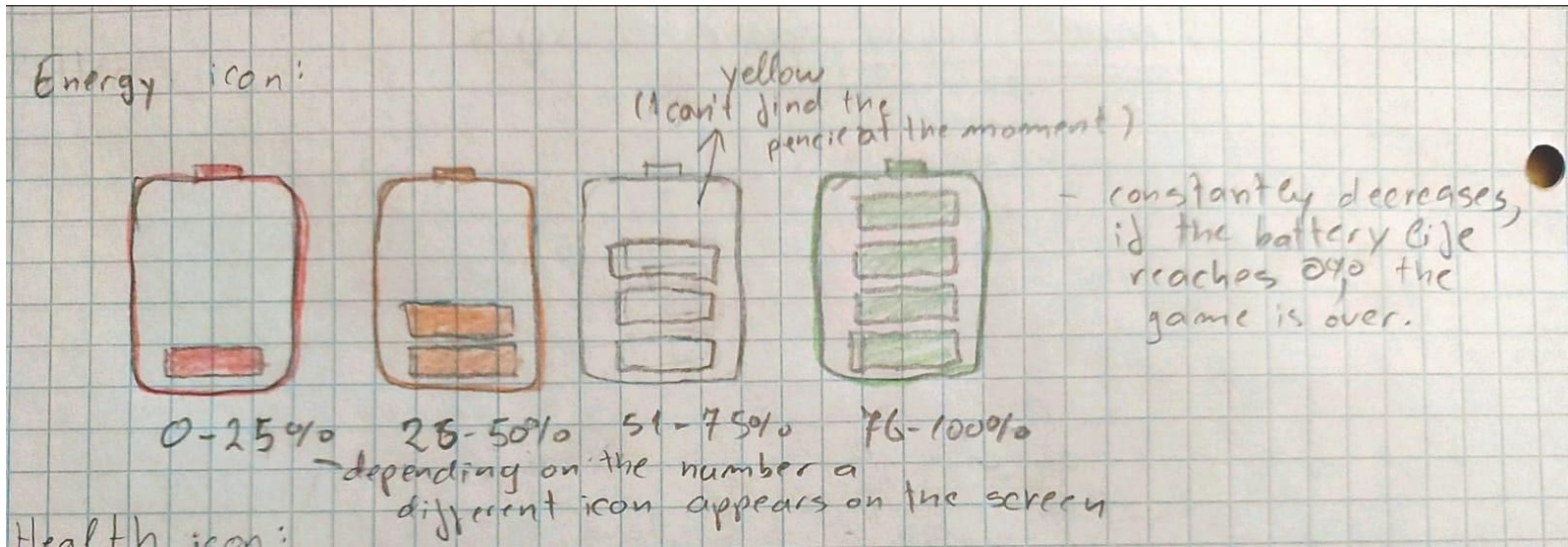
Another type of enemy that we have are viruses. One of which instantly kills Hans if the player doesn't manage to get rid of it on time (by shooting at it). This virus will be the rarest enemy to occur, because of its deadly nature.

Second type is a bit more merciful. If not killed on time, it only makes the player sick for a few seconds. While in the state of sickness, the player must not run into another green virus, or it will end up dying. Needless to say, these viruses will come in small groups, one after the other, or otherwise the "getting sick" feature would not make much sense.

Note: the first virus will not have ridiculous teeth as in the picture, I was just trying to make it look angry. In the actual game I would go for the facial features similar to the character Venom from the movie with the same name.

Energy and Health:

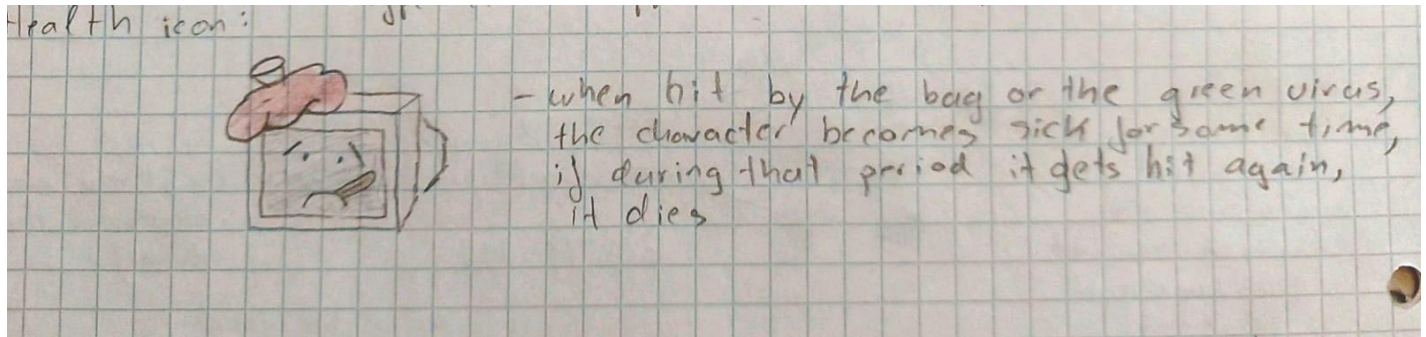
- Energy



Since our character is a computer, it only makes sense for it to have battery life. As it is explained on the drawing, the icon that will appear on the screen will depend on the percentage of the energy that is eternally represented in our code. This percentage will constantly drop, and if it reaches 0%, the game is over.

So, one may wonder, how can Hans live longer than one battery lifetime. Well, along our tunnel, every now and then, a coin-like object will appear (a token to be precise ; will be discussed in details later), that will provide electricity for Hans, and hence, recharge him (still not decided if it will be a full recharge or partial).

- Health



This is a feature directly connected to the green virus we discussed above. If the player doesn't successfully kill the virus in time, Hans becomes sick, and this icon appears next to the energy level. This state will last a certain amount of time, and the game is over if Hans gets hit by a green virus again during this period.

(On the drawing I have written that the same will occur with bugs, but I have changed my mind since writing that down).

Tokens:

In our games tokens are understood to be coin-like objects that are found rotating along the way and, if picked up, can benefit Hans.

Every token will have a 2D picture on both faces on the coin, indicating what it is used for (the reason behind making all tokens in the shape of a coin is simply to make it easier to design various types we have).

First and most important token is the one with a sticker of a lightning bolt on it. This token will appear quite frequently, and will be used to recharge Hans.

Second type is a token that makes a certain enemy disappear for a short period of time. The picture on the token will look like one of the enemies, with the red stripe over it (similar to the "no waiting" road sign).

Last 2 types will be so-called power-ups.

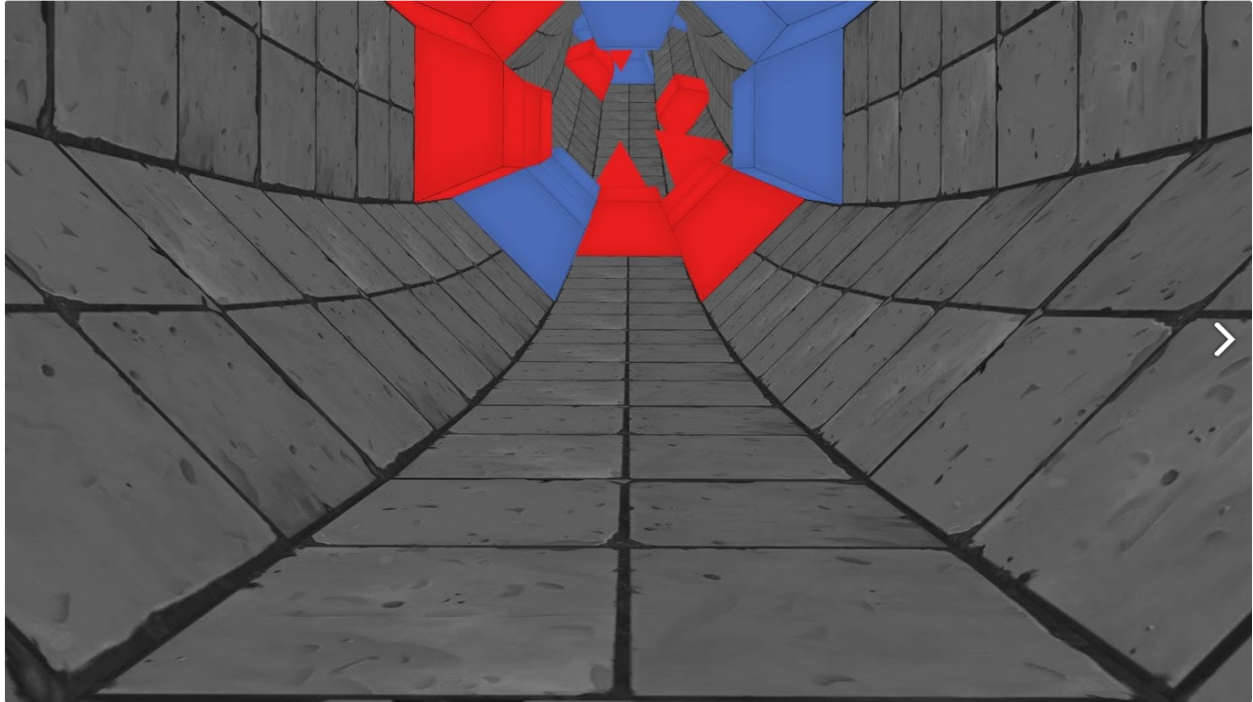
One will have Hans in the form of a ghost, which will allow him to walk through the traps and enemies without getting damaged.

Second power-up “turn on” the second laser Hans has (usually he will shoot with only one of them), and thus allow him to kill the enemy twice as fast.

Note: These last 2 tokens are optional and will be added only after all other features of the game are implemented.

BACKGROUND:

General:



In all of our levels, the tunnel will be in the shape of a full hexagon. After playing a couple of games of this type, I have concluded that a lot of them make your head hurt really fast because every tunnel resembles a hypnotic spiral. Thus, in this implementation, the tunnels will be made less aggressive by not making it seem like they are moving towards the player, but rather, Hans will move forward in space. Size of the tunnel will also be comfortable enough not to make players feel claustrophobic. The goal is to avoid creating anxiety that games of this type usually do.

A good example of a wide and non-headache-giving tunnel can be seen in the picture above.

Because of a lot of new features added, speed of the movement of the collective game will be a bit slower than in classic tunnel rush, to give the player enough time to get rid of the enemies and pick up tokens.

The tunnels will not curve in any direction. Reason behind this is that the goal is to make the game overall look like an endless path going forward (it will get smaller the further the view - like in the picture of the level 3).

Another common feature of all tunnels is that they will sometimes fork into 2, and the player must choose a path they want to take. However, this feature will be left as optional.

In the next part, we will see 3 levels of the tunnels. However, more will be added if there is enough time (this feature is optional).

Level 1:

In the first level our tunnel will look like a lot of windows glued together somewhere in outer space (thus, we will see dark background and stars through our tunnel).



Picture above shows a similar tunnel like bridge.

Level 2:

This level will be very similar to the picture we have seen in the general description of the background. The reason behind this is that in this level we will be encountering bugs, thus a tunnel like that seems appropriate.

Level 3:



In this level we will be seeing viruses. For that reason our tunnel will resemble a laboratory, as if the viruses escaped and are attacking us.

GAMEPLAY:

Since a lot of the rules were described in the previous pages, here we will make a few important points that need to be mentioned:

- Levels will play one after the other. After the full circle has been made, we go back to level 1, this time with the speed increased a bit.
- Length of each level will be fixed (approximately each level will last 1 minute and 30 seconds).
- Level 1 only contains traps and is thus the easiest. Level 2 additionally contains bugs, while level 3 has traps and viruses.
- At the end of each level there will be a label indicating the next one. Additionally, Hans will float through space while this label appears (this will last a couple of seconds). This will appear as a big jump between the 2 tunnels.
- Movement will be done with left and right arrow keys. This movement will seemingly rotate the tunnel and all the traps. Reason behind this is to avoid Hans standing upside down and trying to play like that.
- The score of the game will be how many meters has the player managed to pass without getting killed
- On the upper right part of the screen we will see current battery life (only the icon, not the percentage) and the sick icon if Hans caught the virus.
- In the middle upper part of the screen there will be the token that is currently valid (except the energy token), if there isn't any, the place will be empty.
- In the upper left part of the screen we will see the current score.
- Tokens will only appear one at the time.
- Every time a tunnel forks, at the entrances we will see 2 different tokens, so the player may choose. This way the player may decide which kind of advantage they want (maybe they are running low on energy, or they want to avoid some enemy for a while).
- Energy will constantly decrease, but the energy tokens will occur frequent enough so that if the player manages to pick up every single energy token, the battery will never drop under 50%

- Since the guns are attached to Hans, they don't need to reload, he can shoot infinitely many times, but the battery life will be drained a bit faster than when he isn't shooting (yet to be decided).
- All of the occurrences of the traps, enemies and tokens are random.
- Background music and other sound effects will be included (all of the sound will be found online).
- The game ends when the battery gets to 0%, one of the viruses kills Hans, or a trap isn't successfully dodged ; Hans hits the wall head on (so a perfect game would last forever).
- If Hans only brushes the wall he will lose 15% of the energy.
- During the game Hans will always be visible only from his back, his face will be visible only as a 2D picture at the end of the game
- It is still not decided how the design will look, but there will be a start button at the beginning of the game, and at the end firstly we will see game over labels, and after that the score will be counted, after that the player will see a picture of Hans saying "Good job".
- All of the characters will be animated to my best abilities. Hans should usually appear as if he is on rollerblades (technically he has omnidirectional wheels, so in real life he would not use that sort of movement, however having him stand still and only the wheels rotating seems a bit boring). Additionally he will raise his hand when shooting.
- Bugs will have the same movements they have in nature, and regarding the viruses, the purple one will have a spider-like walking, and the green one will simply float through air.

REALIZATION PLAN:

1. Make tunnels for all 3 levels
2. Make Hans
3. Allow him to walk through the tunnels
4. Merge tunnels together
5. Add scoring (at this point Hans runs through empty tunnels and the score is counted)
6. Make traps
7. Add them to the game
8. Make collisions between Hans and traps
9. Make bugs and viruses
10. Add them to the game (on appropriate levels)
11. Make collisions between Hans and bugs/viruses
12. Add energy icon
13. Add energy functions
14. Add health icon
15. Merge energy, health and bugs/viruses as specified before
16. Make tokens
17. Add tokens (until now energy will fill itself every now and then, always being above 0%)
18. Optional features
19. Brushing up