



Trees, Our Lifeline – Part I

Hello everyone!

Great to see you again!

In our last mission, we designed a game to save the fish by navigating it safely through the randomly moving oil spills and ensuring that it reaches the finish line. Today, we are going on a yet another mission!

This time, we will be creating awareness about saving our beautiful planet by planting the right trees on the right landscapes.

Before we start our mission, there's something that I would like to tell you. Do you know that every tree has its own unique way of contributing to our mother earth!

Are you aware that there are trees like Arjuna or the Sacred tree which help in reducing noise levels if they are planted efficiently in areas where the noise pollution is high? Have you ever heard of the Auri tree or the Weeping Fig tree which are dust and smoke resistant? In fact, the Weeping Fig tree is the official tree of Bangkok, the Capital city of Thailand.

Planting a tree is like a lifelong investment. How well this investment grows depends on the type of tree selected and the location where it is planted.

Reliable sources claim that each year, about 75 billion tons of fertile soil gets eroded from the surface of the land—a rate that is about 13–40 times faster than the natural rate of soil formation. Approximately 40% of the world's agricultural land suffers due to deterioration of the condition of soil.

According to the United Nations, fertile soil covering an area equal to the size of Ukraine is lost every year because of drought, deforestation and climate change.

According to a Ghana based Institute for Natural Resources, if the current trends of soil degradation continue in Africa, the continent might be able to feed just 25% of its population by 2025.

It is important to plant trees as they not only improve the quality of life but also sustain life and fulfil the essential needs of mankind. Moreover, planting the right kind of tree at the right place plays an extremely important role in avoiding problems like soil erosion, wind erosion, tillage erosion and many other damaging processes.

Now that you have learnt about the importance of planting trees, especially the right trees at the right location, are you ready to take on this mission?

Our mission is simple yet difficult! We have to create a game in Scratch which we will call 'Trees-Our Lifeline' and where the challenge that the player faces is to choose the right tree from a set of given trees and plant it at the right place every time. The game offers multiple landscapes such as High Wind landscape, Industrial landscape, Coastal landscape and Soil erosion landscape. Remember, the scoreboard keeps ticking based on the player's choices. Every time the player makes a right choice, she or he is rewarded and every time the player makes a wrong choice, she or he is penalized. Sounds fun, doesn't it?

I am sure that we will use our creative thinking to design this interactive educational game.

Time to get started with developing the Trees, Our Lifeline game.

In order to create this game, we will work on four different tasks:

- a) Setting up the Game Screen – Part I
- b) Setting up the Game Screen – Part II
- c) Coding the Tree Sprites – Part I
- d) Coding the Tree Sprites – Part II

Task – I: Setting up of Game Screen – Part I

Let us FIRST understand the distinct screens that our game needs. We need:

- A Home Screen or Game Start Screen
- A Game Rules Screen

- Four Different Landscape Screens for the Game
- A Game Over or Game Restart Screen

Now, let us begin with our first task of designing and setting up the Screens for our game. As usual, delete the cat sprite and any other images so that the screen looks empty. Go to the extreme right at the bottom and click on the image icon. Choose an image for your home screen from the available backdrops, create an image or upload an image. We are uploading an image. Convert the image into a vector. Resize the image to fill the screen and rename it. Delete any empty backdrop if you find one.

Let us now Upload the 4 different landscape Screens – High Wind Landscape, Industrial landscape, Soil erosion landscape and Coastal landscape. As usual, convert into vector, resize and rename. Rename each backdrop to suit the landscape seen in the image. Keep some blank space at the right to accommodate the trees in that area.

Our next step is to create a Game Over screen for the game. Follow the steps described earlier. We are choosing a cool screen this time from the available backdrops. Don't forget to rename the screen to 'Game Over Screen' and convert to vector.

Let us now create a screen for displaying the rules of our game. Choose an image from the available backdrops, create an image or upload an image. We have chosen a nice backdrop provided by Scratch and are renaming it to 'Game Rules Screen'. To display the rules, Select the Text tool and type them in or copy them from a text file. We have already created our rules and typed them on a wordpad file. We will copy them and paste them here. You can change the font and the colour of the text as per your choice. Adjust the text on the screen so that the player can read the rules easily. You can use the rules we have created or modify them to suit your requirement.

Trees, Our Lifeline **Rules for the Game**

Mission: Plant the right tree on the right landscape.

- 1. Click on the START button to begin playing.**
- 2. There are four trees and four landscapes. Select any one tree by clicking on it. Only 1 tree can be moved to a landscape at one time. The tree-landscape correspondence is given below.**

Banyan Tree - Industrial Landscape

Neem Tree - Coastal Landscape

Tecomella Tree - Soil Erosion Landscape

Java Plum (Jamun) Tree – High Wind Landscape

- 3. Use the UP, DOWN, LEFT and RIGHT arrow keys to move the tree towards the plantation patch on the landscape.**
- 4. You will get +10 Points for planting the right tree on the right landscape and -10 Points for choosing the wrong landscape.**

Time to add buttons to our home screen, Rules screen & Game over screen.

Click on the Home Screen backdrop. We will add a start button so that the game begins when the player presses it. We will also add a rules button to this screen so that the player can check the rules of the game before starting.

We need to create a new sprite for the start button. On the bottom right, click on the cat icon and search for the sprite of a button. Of course, you can create one in paint or upload a sprite too. Rename both the sprite and the costume to 'Start Button'. Drag it to the correct position on the Home Screen backdrop. Go back to the costume tab of the start button sprite and select the text tool. Type 'START' on the button and 'Press to start' under it. Reposition the button and text appropriately, change the size of the button and change the color of the text to make the start button attractive.

Now we will add the Game Rules button.

Repeat the steps for adding a new sprite. We have selected a button from the Scratch library. Rename both the sprite and the costume to 'Game Rules Button'. Drag it to the correct position.

Go to the costumes tab, type the text 'Game Rules' over the button. Resize & change the colour of the button as per your requirement.

We also need a back button on the game rules screen so that the player can go back to the home screen. Go the Game Rules Screen Backdrop. Repeat the steps that you used for adding the 'Game Rules Button' to add a back button. Drag it to the same position as the Game rules button so that it looks like it is overlapping the Game Rules button. Rename it. In the costumes tab, type 'Back' over it. Resize & change the colour of the button, if needed.

Time to add to a Restart Button to the Game Over Screen. Go to the Game Over backdrop. Repeat the steps that you used to add the start button. Rename the sprite and costume as 'Restart Button'. Drag it to the same position as the 'Start' button so that it looks as if it is overlapping the start button. In the costume section, using the text tool, type 'Restart' over the button. Change the colours and fonts if needed.

Let us upload all the tree sprites now.

We have labelled our tree sprites so that the player can recognise them. Rename the sprites of the trees as appropriate. Go to the costumes tab of the banyan tree. Convert it to vector to resize the tree. Position it on the left side of the screen. Repeat these steps for all the remaining 3 trees. Remember to place them in such a manner so that they can be easily moved to a landscape after being selected. Just a small tip here, always use png images when you are uploading an image.



Now we have the trees and the landscapes. We need to mark positions on our landscapes where the right trees can be planted. To accomplish this, we will require a soil sprite for each landscape. As usual, you can either select a sprite, create a sprite or upload a sprite. We are uploading a sprite. Resize it appropriately and rename to 'Coastal Soil'.

Since we have 4 landscapes, we need 4 soil sprites. Right click the Coastal Soil sprite and create three more copies. Rename the Soil sprites as 'Industrial Soil, Erosion Soil and High Wind Soil'. We have to place these soils at suitable positions for each landscape. Select the relevant backdrop and then position the correctly named soil patch on the appropriate landscape.

We have completed the first task of our Trees – Our Lifeline game development. Let me recapitulate. We have setup all the game screens, that is, a Home Screen with two buttons - Game Start and Game Rules, a Game Rules screen with a Back button, 4 landscapes and 4 tree sprites and a Game over screen with a restart button. There is a one-to-one correspondence between the trees and the landscapes, that is, a tree is right for only one landscape.

In the next video, we will code our backdrops and buttons.

See you soon. Bye-bye!