

Helicopter Game

Description

Using arrow keys fly a helicopter. Show the effect of gravity, i.e. if you don't do anything, the helicopter should automatically move down slowly. So, "Down" arrow key is not needed. The helicopter is able to land on a helipad. Show moving clouds. The fan at the top of the helicopter should spin.

Implementation in Scratch:

Concepts used:

- User interaction (keyboard)
- Costumes
- IF-ELSE and touch sensing

Sprites:

1. Helicopter
2. Landing pad (can be part of the stage)
3. Clouds

Program steps:

1. Click on the "Green flag": everything is reset to original state.
2. Press SPACE BAR to start the game.

Design Steps:

See "Design steps.PPT"

Making helicopter costumes:

1. Load the helicopter sprite. Call it "main".
2. Erase both fans. Add two small green circles as landing gear.
3. Load another helicopter sprite. Call it "dummy".
4. Erase everything except the big fan. Save it local file as "bigfan".
5. Delete sprite "dummy".
6. Load another helicopter sprite. Call it "dummy".
7. Erase everything except the small fan. Save it local file as "smallfan".
8. Delete sprite "dummy".
9. Go to sprite "main". Convert to "vector" format.
10. Import "bigfan" and "smallfan".
11. Make 4 costume copies. In each costume rotate bigfan and smallfan to a different angle and mount them on the helicopter.
12. Convert all costumes to bitmap format.

13. Paint the helicopter windows in each costume with different colors, to give the impression of blinking lights during flight.

Data structures

Algorithms

Helipad algorithm:

Forever:

- If touching helipad, do nothing
- Else move down (due to gravity)

User Interface:

Sprites:

- Helicopter (with costumes to show moving fans)
- Helipad
- Clouds

User Interaction:

- Green flag resets everything and starts the game
- SPACE BAR adds effect of gravity
- Arrow keys (except down) control the helicopter

Hard-coded Stuff:

Helicopter falls due to gravity. Arrow keys keep it afloat and moving. Helipad allows it to land.

Solutions:

Version 1: Helicopter-1.sb2

<https://scratch.mit.edu/projects/321264929/>

Version 2: Helicopter-1.sb2

<https://scratch.mit.edu/projects/321265164/>

Version final: Helicopter-final.sb2

<https://scratch.mit.edu/projects/321265306/>

Author: Abhay B. Joshi (abjoshi@yahoo.com)

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