POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
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College of Computer and Information Sciences

“Black Hole Simulator”

In Partial Fulfillment of the Requirements in the Major Subject

Modeling and Simulation

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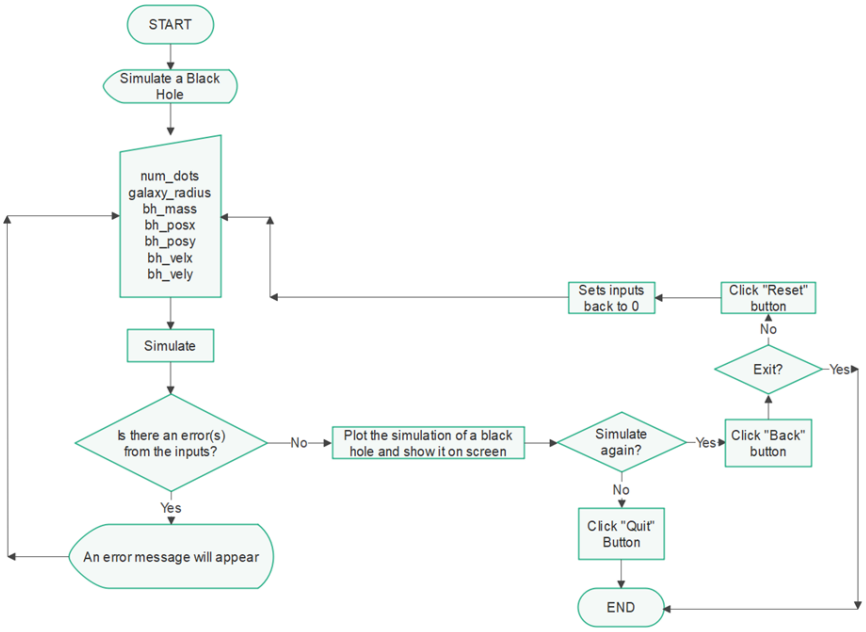
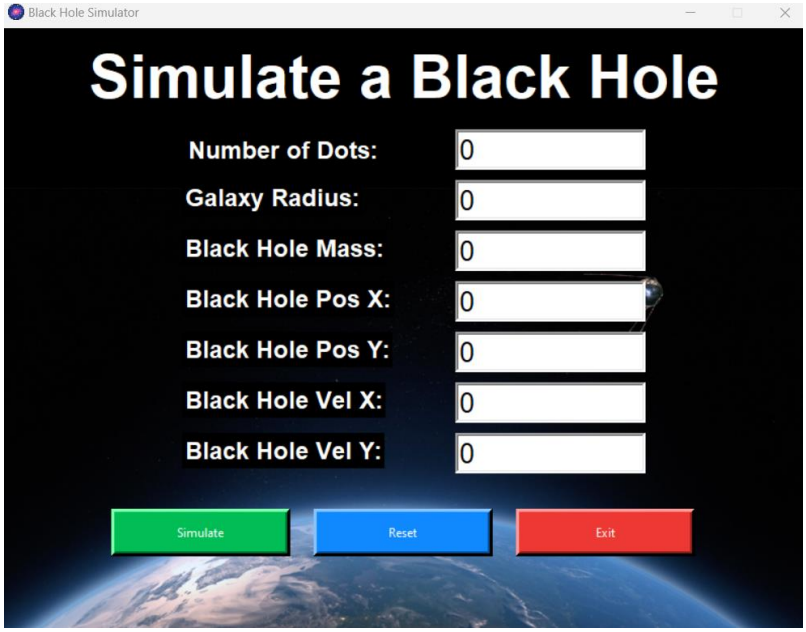
FLOWCHART


START
Simulate a Black Hole
num_dots
galaxy_radius
bh_mass
bh_posx
bh_posy
bh_velx
bh_vely
Simulate
Is there an error(s) from the inputs?
No
Yes
An error message will appear
Plot the simulation of a black hole and show it on screen
Simulate again?
Yes
No
Click "Back" button
Exit?
No
Yes
Sets inputs back to 0
Click "Reset" button
Click "Quit" Button
END

INSTRUCTION MANUAL

The black hole simulator is a software that simulates the behavior of black holes, using mathematical models to recreate their physical properties. It helps scientists understand how they form, evolve, and interact with surrounding matter. Users can adjust parameters and generate visualizations.

I.Interface



II. Enter the number of dots within the galaxy

III. Enter the galaxy radius

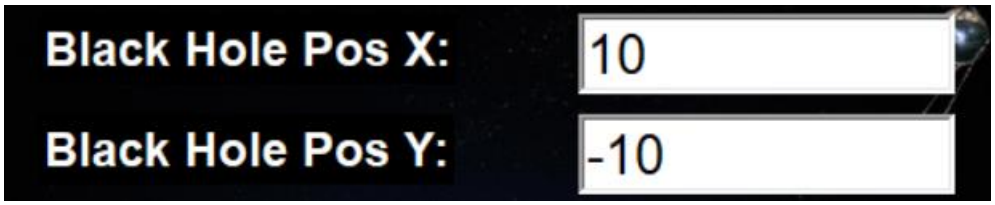
This indicates the size of the galaxy

IV. Enter the black hole mass

This indicates how strong the black hole pulls the celestial bodies

V. Enter the position of the black hole

Black Hole Pos X indicates the black hole's position at the x-axis while Black Hole Pos Y indicates the black hole's position at the y-axis. The values indicate how many units away the black hole is from the origin (0,0)

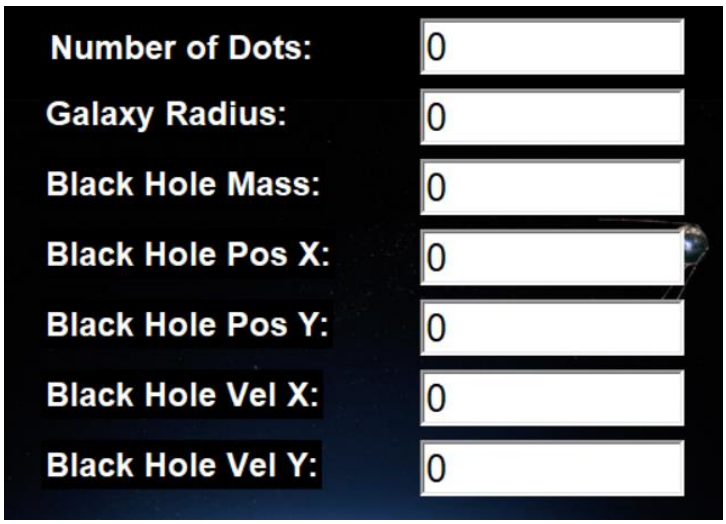


VI. Enter the velocity of the black hole

Black Hole Vel X indicates the black hole's horizontal velocity while Black Hole Vel Y indicates the black hole's vertical velocity.

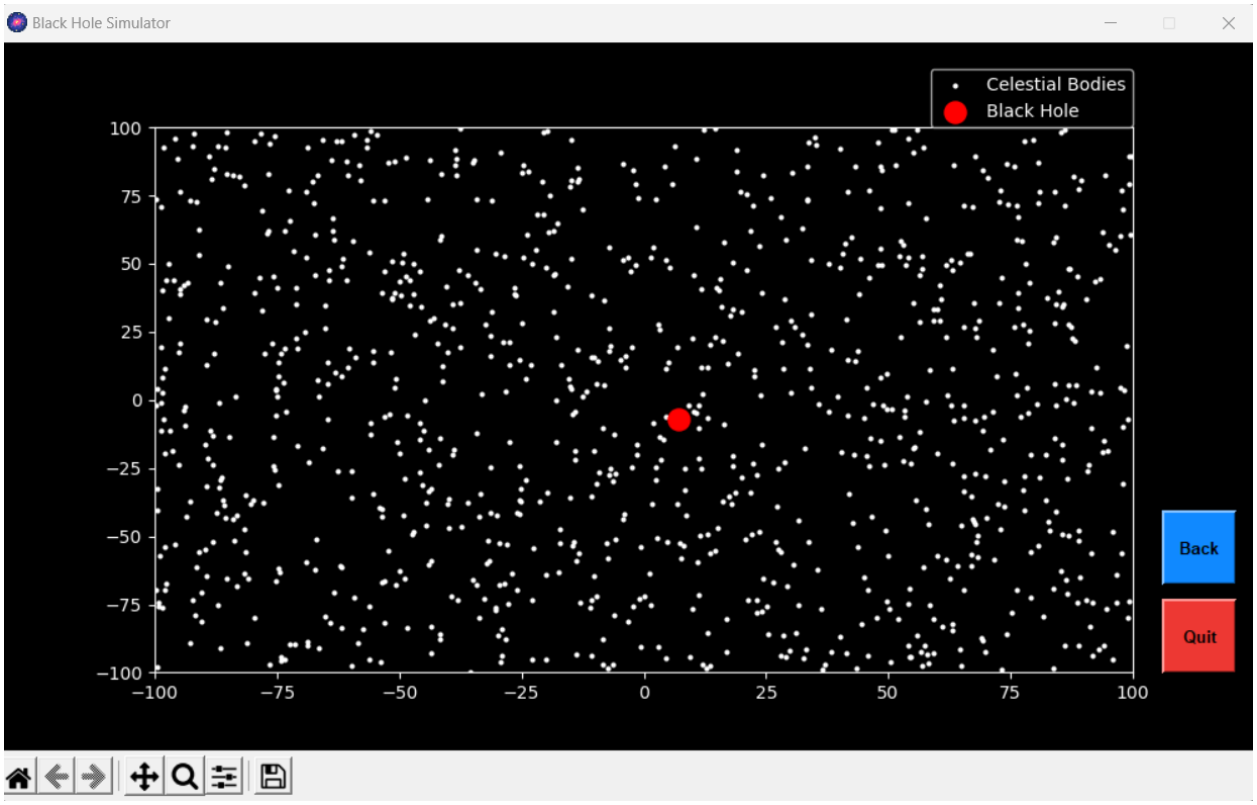
VII. Reset values

Press the "Reset" Button to reset the values back to zero



VII. Simulate the black hole

Press the “Simulate” Button to open another window which shows the simulation of the black hole.



VIII. Exit Program

Press the “Quit” Button to exit the program

IX. Go to back to Main Menu

Press the “Back” Button to go back to main menu

X. Exit Main Menu

Press the “Exit” button to exit main menu and close the program