

COMPUTER GRAPHICS

Assignment-1 Readme File

Running the Tangram Puzzle Application

For running the application, you need to serve the static files using any server.

- Using Visual Studio Code:

- If you are using VS Code, open the 'source_code' folder using VS code.
- Then, you can simply use the 'live server' plugin.
[<https://www.freecodecamp.org/news/vscode-live-server-auto-refresh-browser/>]
- Click on 'Go live'.
- It will host the application on a port and open it on the browser.

- Using Python (from linux terminal):

- Ensure that python is installed. If not, first install python.
- Navigate to 'source_code' folder using 'cd' command.
- If using python3, run following command to host a local server.

```
python3 -m http.server
```

- If using python 2, run following command to host a local server.

```
python -m SimpleHTTPServer
```

- By default, this will run the contents of the directory on a local web server, on port 8000. You can go to this server by going to the URL localhost: 8000 in your web browser or directly click the link provided in the terminal.

Using the Tangram Puzzle Application

Switching the modes of application:-

Initially application is in 'Mode 0'. Modes can be switched using 'M' key.

Controls for different modes:-

Mode 0:

This mode is just to display initial state of puzzle. Hence no user interactions are there in this mode.

'M' key:- Switch to 'Mode 1'

Mode 1:

In this mode, you can individually move and adjust primitives independently to get the final configuration. Following are the controls for this mode:-

Primitive Selection

- *'Left Mouse Click' :*

Clicking on the screen would result in selecting the primitive (having center closest to the place where mouse clicked). The selected primitive now, can be moved using different key clicks.

Translation

- 'Up arrow' key : Moves the selected primitive up.
- 'Down arrow' key: Moves the selected primitive down.
- 'Left arrow' key: Moves the selected primitive left.
- 'Right arrow' key: Moves the selected primitive right.

Scaling

- '+' key: Scales up the selected primitive uniformly about its center.
- '-' key: Scales down the selected primitive uniformly about its center.

Rotation

- ‘(‘ key : Rotates the selected primitive anti-clockwise about its center.
- ‘)’ key: Rotates the selected primitive clockwise about its center.

‘M’ key:- Switch to ‘Mode 2’

Mode 2:

After we get the final configuration from ‘Mode 1’, we can adjust the whole configuration to adjust and place it in the frame. The configuration can be moved using following keys:-

Translation

- ‘Up arrow’ key : Moves the configuration up.
- ‘Down arrow’ key: Moves the configuration down.
- ‘Left arrow’ key: Moves the configuration left.
- ‘Right arrow’ key: Moves the configuration right.

Scaling

- ‘+’ key: Scales up the configuration uniformly about the center of bounded rectangle.
- ‘-’ key: Scales down the configuration uniformly about the center of bounded rectangle.

Rotation

- ‘(‘ key : Rotates the configuration anti-clockwise about the center of bounded rectangle.
- ‘)’ key: Rotates the configuration clockwise about the center of bounded rectangle.

‘M’ key:- Switch to ‘Mode 3’

Mode 3: In this mode, the screen is cleared. Hence, no user interactions in this mode.

‘M’ key:- Switch to ‘Mode 0’