IT-441

Computer Graphics

Assignment 1

Hierarchical Modelling

Humanoid

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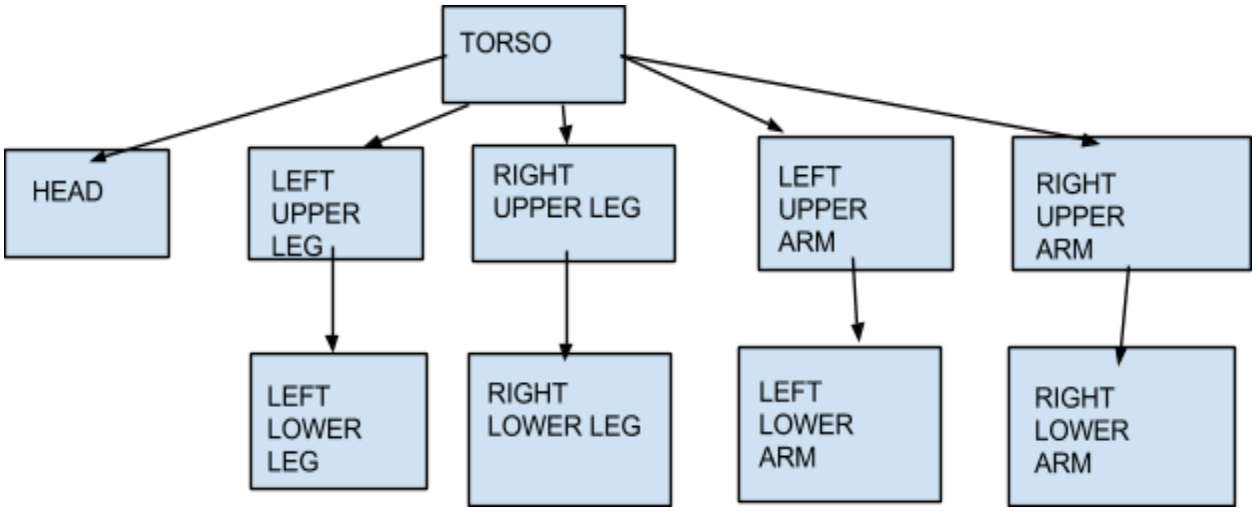
INTRODUCTION

This program constructs a humanoid using separate modules to construct the various body parts namely torso,head,left and right, upper and lower arms and legs.
Hierarchical modelling,as explained in the class, is used using matrices in the modelview stack.

PROGRAM FUNCTIONS

The program does the below mentioned:
1) Create a Humanoid with Hierarchical Modelling
2) Enable the user to move its parts individually
3) Make it wave a hi
4) Make it dance randomly
5)Shake his hands like Rajesh Khanna

ALGORITHM



The body parts are rendered as shown above.Every body part is made as function which pushes a matrix draws a geometry and then pops the matrix. When the parent node moves so does the child node.
For individual movement of the body parts and waving a hi, the respective rotation angles are changed and the humanoid/bot is redisplayed.
For the dance moves, depending on the move chosen, values in move array change and the corresponding rotation angles are changed (as per elapsed time) and the bot is redisplayed.

USER OPTIONS

The user can control the humanoid using keys on the keyboard.
All of the body parts can be individually moved using various keys(Please see the keyboard function for more details) .
View can also be changed.
It also does the Rajesh khanna signature step by shaking both hands,waves a hi and also does random dancing on pressing the corresponding keys.

MODULES

Display function for displaying the humanoid as per the necessary rotations and translations.

Individual modules for creating basic primitives for torso, head, left and right, upper and lower arms and legs.

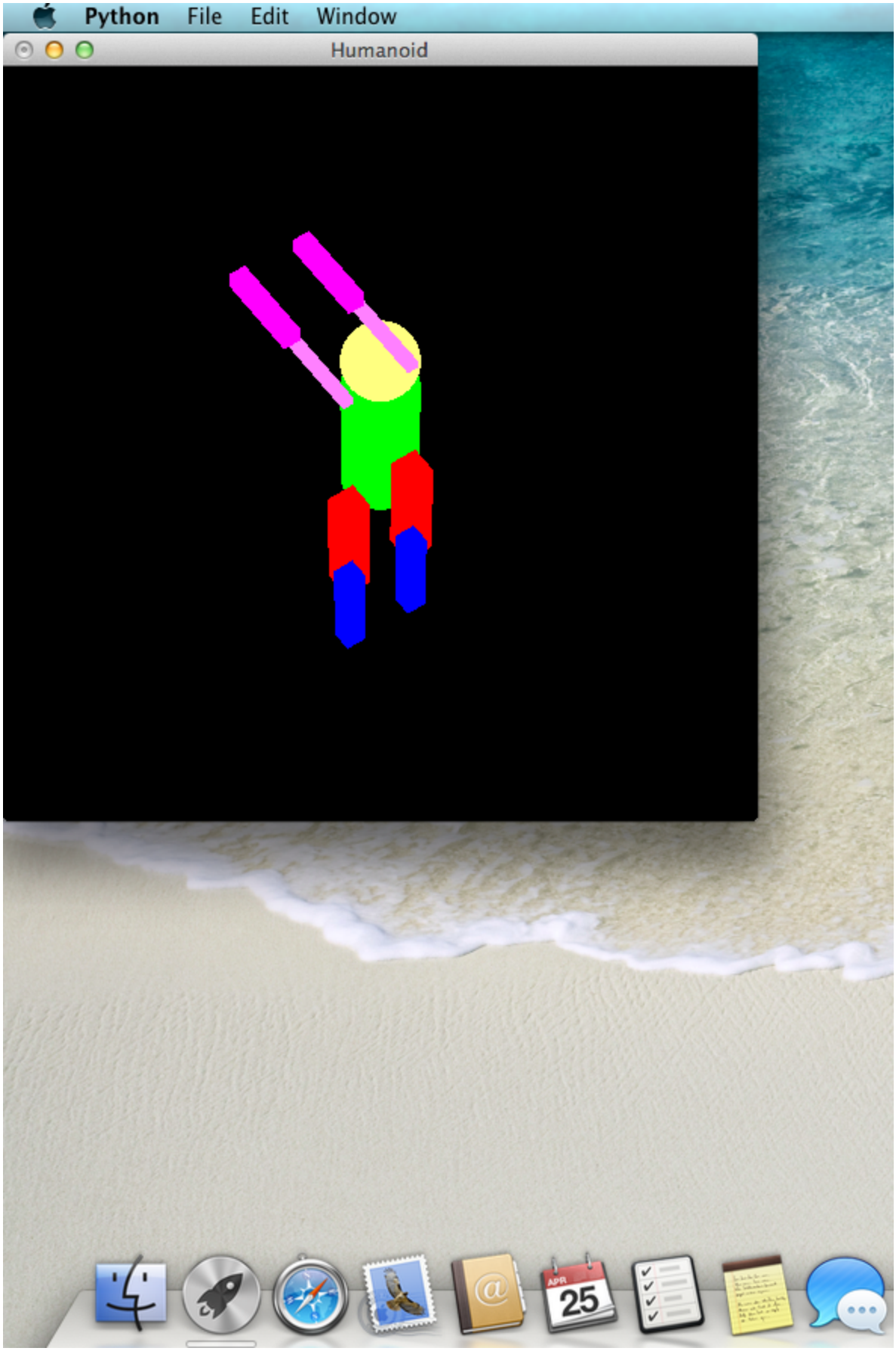
modules for colors and getAngle for angles at various instants of time.

Idle module which is executed when there is no input. On the basis of move chosen, the angle rotation array is set at various instants of time depending on the frequency set of each body part. It redisplays after every call.

Mykey which is the keyboard function defines functions to be called at each key input and helps execute actions as per user's choice.

SCREENSHOTS

(Please see the next page)


Python File Edit Window
Humanoid
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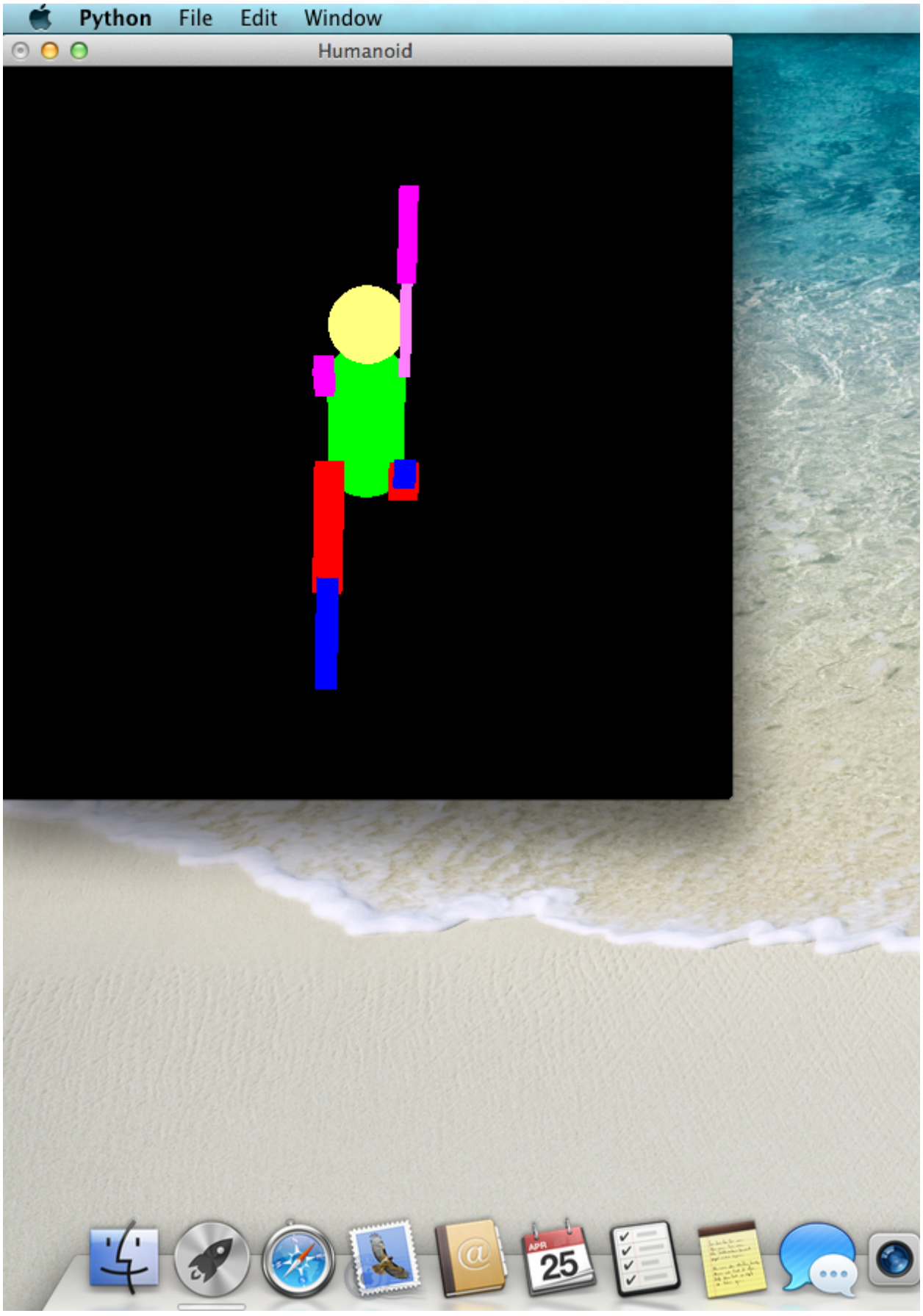
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