SIT102 Introduction to Programming

Pass Task 1.2: Shape Drawing

Overview

Now that you have everything setup we can start to explore the ideas of sequence and procedure calls. In this task you will create a program that opens a window and draws a picture to the screen. This will then be extended to include your own custom procedures, allowing you to organise the functionality in your program.

Submission Details

For this task you need to create a program that opens a window and creates two different pictures using basic shape drawing procedures from SplashKit.

Submit the following files to OnTrack.

- Your program's source code (*program.cpp*)
- A screen shot of your picture being drawn in the window
- A PDF of the answers to the questions in the Word file in the task resources

You want to focus on the following key ideas, and make sure you can explain them in relation to your program.

- Procedures and Procedure Calls
- Sequence
- Procedure declarations

Instructions

For this task you will start to make use of the procedures that we provide in SplashKit. We can use these procedures to create and open a windows, show bitmaps, play sound effects and much more.

1. The following resources will help you complete this task:

    - Watch the Week 1 videos on the unit site, they will guide you through the process of getting started with this task.
    - Read though the Getting Started Drawing using Procedures article on the SplashKit website.
    - Watch the video on Creating your own Procedures - part of the week 1 videos.

    If you would like additional examples of this you can watch this older version of the 1.2P Shape Drawing video.

2. Start by creating a new folder to store your project's code. The following shows the instructions for doing this in the terminal.

    ```
    cd /c/Users/andrew/Documents/Code
    mkdir ShapeDrawing
    cd ShapeDrawing
    ```

3. Get **skm** to create a new C++ project for you:

    ```
    skm new c++
    ```

4. Open **Visual Studio Code** and open the *folder* you created.

    Make sure to open the **folder** (directory) not just the file. This will let VS Code find all of the files related to your project, including the SplashKit files.

    We are now ready to build the program.

Drawing the House

1. Start by creating the house scene from the article and video linked above:

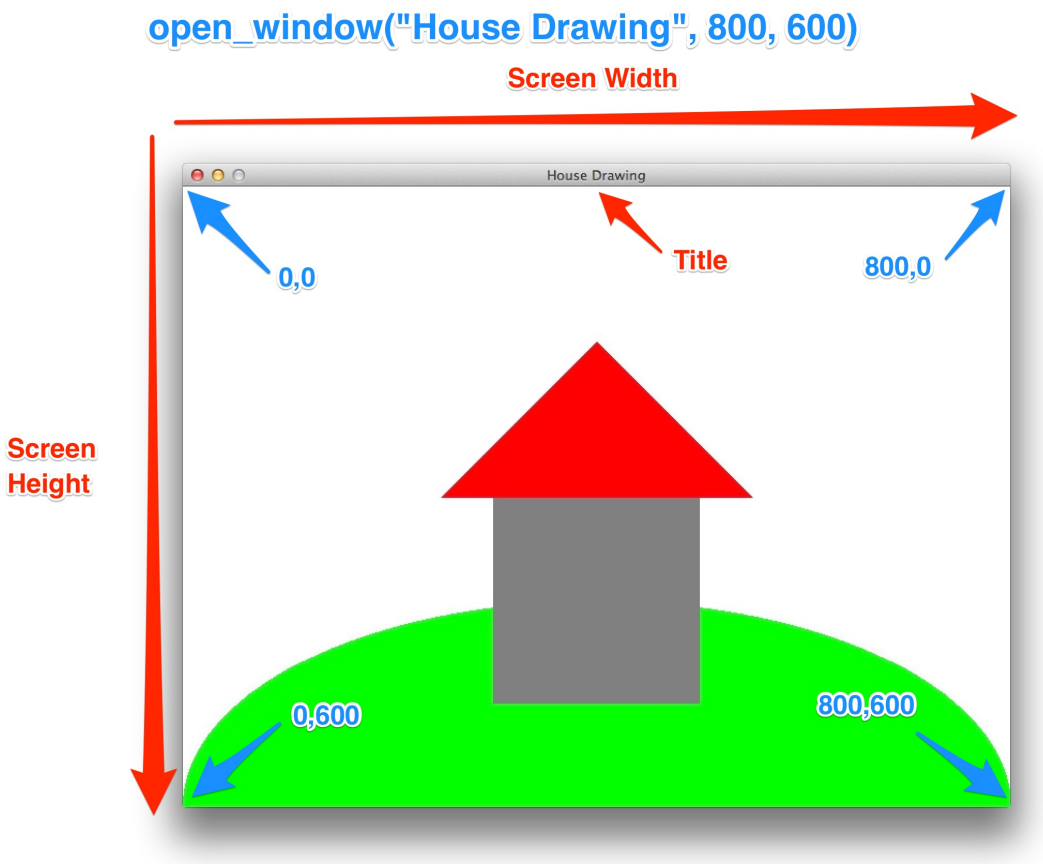

Figure: Window with dimensions illustrated

2. Build and run the program.

```
skm clang++ program.cpp -o ShapeDrawing
./ShapeDrawing
```

   Make sure it all looks correct before moving on.

Your Task

Use what you have leart about procedure calls and sequence to draw a **second scene** that appears *after* the house scene.

Extend the shape drawing program to draw your own custom picture. You need to demonstrate that you can call a number of different procedures, and sequence these to create a picture.

1. Add some code, after the call to `delay` that will clear the screen (by calling `clear_screen`) and then draw a second picture of your own creation.

2. Write the code for this in **your own custom procedure**.

   - Declare the procedure above `main` but below the house drawing procedure.
   - Call the procedure twice in `main` -- once after drawing the first house, then again after drawing the house again.

3. Use `clear_screen`, then call some shape drawing procedures, `refresh_screen`, and `delay` to draw your own custom picture. Be creative, see what you can come up with using these basic shapes.

   The following code demonstrates where to add your new instructions.

   ```
   int main()
   {
       open_window("Shapes by ...", 800, 600);

       draw_house_scene();
       delay(1000);

       // Draw the second scene here... hint: start by clearing the screen!
       delay(1000);

       draw_house_scene();
       delay(1000);

       // Draw the second scene again here!
       delay(1000);
   }
   ```

4. Compile and run to test as you go.

   ```
   skm clang++ program.cpp -o ShapeDrawing
   ./ShapeDrawing
   ```

5. Test that your program works. You should see the house, your scene, the house again, then your scene again.

Step 5: Submit your work

Do the following before you submit:

- Check to make sure you have your own scene drawing procedure. When you run the program it should show one scene, then the other.
- Download the task resources, and answer the questions in the Word file. Save as PDF to prepare for upload.
- Run your program and grab a screenshot of your scene.

When you are ready, login to OnTrack and submit your code, screenshot, and answers to Pass Task 1.2.

Remember to save and backup your work! Storing your work in multiple locations will help ensure that you do not lose anything if one of your computers fails, or you lose a USB Key.

Task Discussion

For this task you need to discuss at least the following with your tutor:

- What is your drawing? What was the inspiration for this?
- What is the role of **sequence** in your code?
- Where does this sequence start?
- Why create procedures in your code? How do these help?