**Major Programming Project Package**

**Table Of Contents**

* Progression of Specs
  + Initial Specifications
  + Initial Release Schedule
  + Final Release Schedule
  + Work in Progress Reports
* Scratches
  + Background
  + ButtonTimer Movement
  + Card Layout
  + Drop down menu
  + KeyListener movement
  + Moving
  + New Movement
  + Tabbed Panes
  + Timer Movement
* Program Overview
* Bugs

**Progression of Specs**

**Initial Specifications:** Create a program that will help with the understanding of my other classes. Have two different sections in the project, one for Advanced Functions and the other for Physics. You will have the option to choose between the two units and the program will run things on the screen based on what you choose.

**Initial Release Schedule**

|  |  |
| --- | --- |
| **Release Name** | **New incremental features of this release** |
| **1.0** | **Advanced functions Program, Physics programs created** |
| **1.1** | **Create methods for all different units** |
| **1.2** | **Be able to ask any question for unit 1 in either program** |
| **2.0** | **Have all questions for units 2 in both programs** |
| **2.1** | **Loop through to continuously answer questions** |
| **2.2** | **Check functionality of program to be understandable** |
| **3.0** | **Be able to use an answer of one question to answer different questions** |
| **3.1** | **Pass answers between methods to answer different questions** |
| **3.2** | **Have programs explain how they got to calculate each answer** |
| **4.0** | **Update program to answer questions from all units up to date** |
| **5.0** | **Continue to update program with each new unit learned** |
| **5.1** | **Make sure to keep functionality of program up to speed so it will be easy to use** |
| **6.0** | **Have all units included in both programs** |
| **6.1** | **Make sure all questions are included in every unit and every scenario is included** |
| **7.0** | **Test final functionality of program and hand it in** |

**Final Release Schedule**

|  |  |
| --- | --- |
| **Release Name** | **New incremental features of this release** |
| **1.0** | **One Project made for both physics and functions created** |
| **1.1** | **Basic structure inputted for displaying each courses information on the screen** |
| **1.5** | **Question classes created and more functionality in structure made** |
| **2.0** | **Changed structure to make different panels visible at a time based on what the user chose** |
| **3.0** | **Changed structure completely to card layout to have different cards for physics and functions** |
| **3.1** | **Tabbed panes added in both units cards to switch between demonstrations** |
| **3.2** | **Drop down boxes added in the velocity section to choose different settings** |
| **4.0** | **Backgrounds added for every choice in velocity** |
| **4.1** | **Moving image across the screen with different speeds for every sprite chosen** |
| **4.2** | **Acceleration factor just starting to be put into the demo** |
| **5.0** | **Acceleration incorporated to make sprites speed up and slow down** |
| **5.1** | **Gravity section added to drop sprites at different speeds based on which was chosen** |

**Work in Progress Reports**

Included in a separate folder named WiPs.

**Scratches**

\*Included in the project RileyScratches\*

**Background**

Scratch created for use in all of the panels that use a background for their demonstration.

**Button Timer Movement**

This scratch was created for the gravity section of the program. When the user clicks a button a timer will start that will update the y coordinate of the sprite that is being used for the demo.

**Card Layout**

Creates a card layout that allows you to switch between multiple panels to be displayed on the screen. Was very useful for the overall structure of my program to make moving around all of the panels very smooth and easy to use.

**Drop Down**

Creates a drop down menu box in which you can include multiple options for the user to choose between. Makes it very easy to include lots of different options to choose from without making the screen too crowded.

**KeyListener Movement**

Movement scratch that used a keylistener to move a sprite across the screen. The user was able to click a button to either speed up or slow down the speed of the sprite. Passes the focus between the keylistener and the button listener to allow the both of them to work together.

**Moving**

Original movement scratch that was not successful at all. The user was able to move the sprite across the screen at first by using the key listener but if you clicked a button to change the speed of the sprite the button listener would take the focus and the key listener would no longer work.

**New Movement**

Movement scratch that I used in the final project. Uses a timer to check how long the key is pressed down. As the key is pressed down the speed of the sprite will be multiplied so that it will slowly increase. When the key is released a timer is started so that the speed of the sprite will slowly decrease until it comes to a stop.

**Tabbed Panes**

Scratch that created tabbed panes in a panel in the border layout. Very useful for the organization of the panel and keeps everything in one spot and makes it all look good.

**Timer Movement**

Old movement scratch that I originally used to show acceleration with movement. When you pressed a key it would start a timer that would then move the sprite and increase its speed with every time the timer increased a counter. Eventually switched to a different movement since this one was not very efficient.

**Program Overview/ Introduction**

This project was made to further develop my knowledge in my other classes this semester. There is one section inside of the project for my work in Physics and another for my work in Advanced Functions. Inside of physics you can choose between either a velocity or gravity demonstration. In velocity you choose a sprite which you can make move across the screen and accelerate at different speeds based on the sprite. The sprite will also slow down gradually when you stop moving it. In gravity you choose a planet and then a sprite to use. You then click a button which will make the sprite drop down the screen. The speed of the sprite depends on which planet and sprite you choose since they all will drop at different weights. Inside of the advanced functions side you were supposed to input an equation and then it would display what the graph would look like. I wasn’t able to finish my work in the section though so you are only able to click different buttons which will display images that look like what different equations would look like.

**Known Bugs**

* Moving the sprite in the velocity section before it comes to a full stop won’t reset its speed back to its base so it will take it a longer time to speed up
* In velocity when the sprite is coming to a stop sometimes the sprite will come to a stop right before it would reset so it’s not visible to the user
* If you have a sprite falling in gravity and you then switch to a different sprite before clicking stop the new sprite will start falling right away without you starting it

**Journal**

The journal for my project can be found throughout my asana project Java the Hutt.

**List of Sources**

* Ics3ui.sgrondin.ca
* Card Layout
  + <http://ics3ui.sgrondin.ca/ss15/Layout.html>
  + Card Layout Test program from your github
* Tabbed Panes
  + <http://stackoverflow.com/questions/15032959/java-swing-add-tabs-into-jpanels>
* Drop Down Menus
  + <http://stackoverflow.com/questions/22506331/simple-dropdown-menu-in-java>
  + <http://stackoverflow.com/questions/14306125/how-to-use-actionlistener-on-a-combobox-to-give-a-variable-a-value>
* Backgrounds
  + java-demos.blogspot.ca/2012/09/setting-background-image-in-jframe.html
* MoveImage project from your git

**Note to Future Programmers**

* Get lots of different settings and variables incorporated
* Add something into the Functions portion
* Get better images for sprites
* Add animations for the different movements
* Fix up all of the little bugs

**Favorite Programming Technique**

My favorite programming technique would definitely have to be the drop down menu’s that I used throughout my project. It makes the entire layout of the project so much nicer and makes moving through everything much more smooth and easy to navigate. I’ve included below the code used for creating a bow. 

This code really brought together the structure of my project and got me headed in the right direction. Once this was added in it made moving through the project so much smoother and made the whole thing look nice.