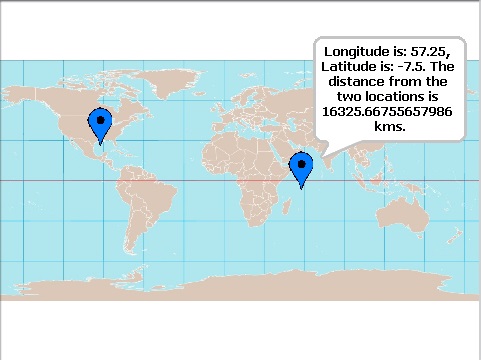
**FIT1040 ASSIGNMENT 1:**

**THE WORLD DISTANCE CALCULATOR**

|  |
| --- |
| **what is it?** |

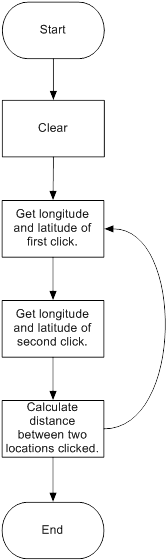


This is a scribble app that consists of a world map and a cursor. This app aims to calculate the distance between the two points that you click on this map when the app is started (by clicking the green flag). Every time you click, the sprite will display itself on the point that you clicked. The first click will also display the longitude and latitude of that point on the map, similarly the second click will do the same along with the distance between the two points. The third click registers as a new first click and will erase any sprites currently on the canvas, so that until you click the stop icon, the app will loop infinitely.

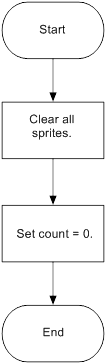
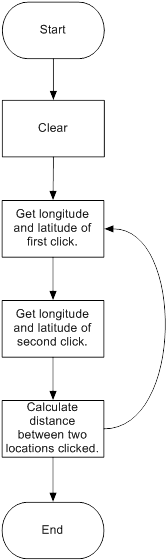
The app must also account for certain errors and work around them so that they don’t affect our results in any way. Such errors that must be dealt with are clicks that are off the map, dragging the mouse, wrong conversions (such as those from x and y co-ordinates to longitude and latitude), and wrong calculations (such as those for calculating distance).

This report focuses on the thought process of the code and test cases to make sure the errors are dealt with. The process is visually represented through flowcharts, both high and low level to illustrate both the basic overview of the code as well as the detailed modules of each process.

|  |
| --- |
| **HIGH LEVEL FLOWCHART** |



**Low LEVEL - clear**

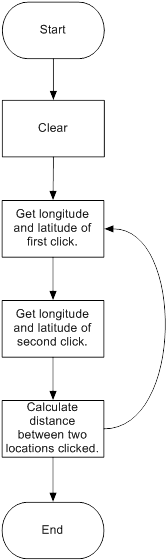






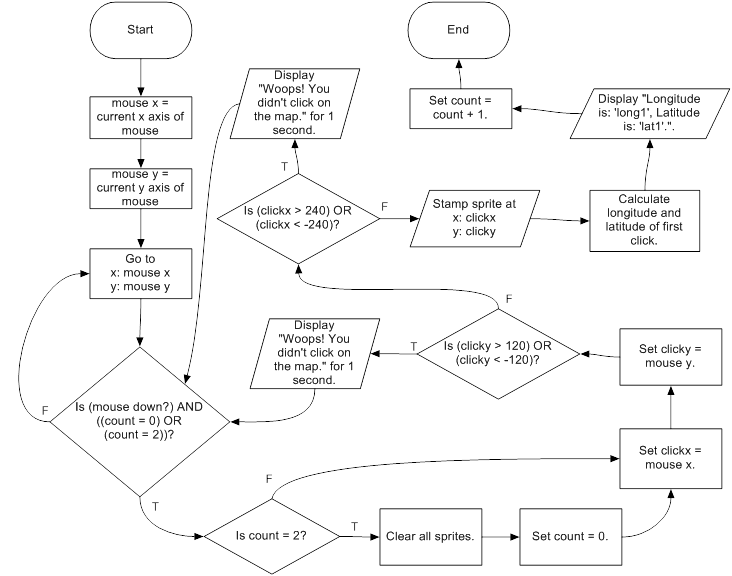


**low level – get longitude and latitude of first click**



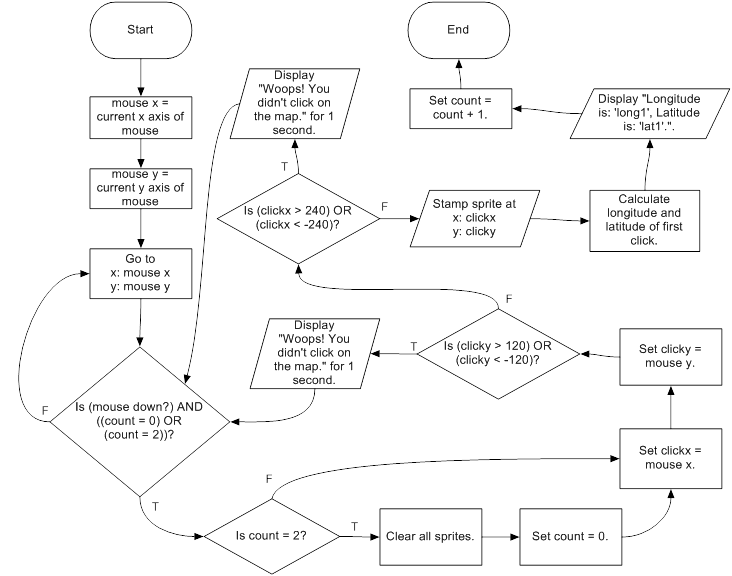






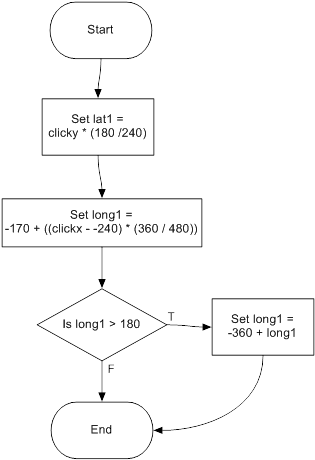


**low level – calculate longitude and latitude of first click**



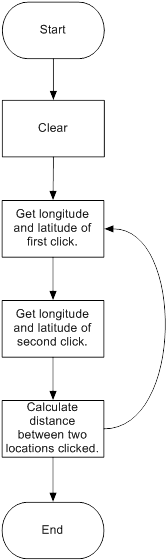






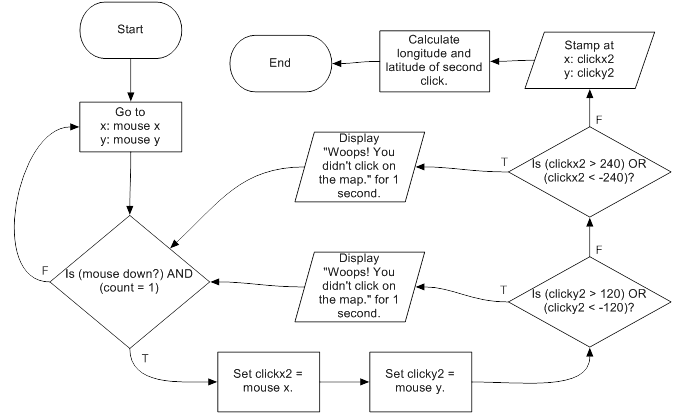


**low level – get longitude and latitude of second click**



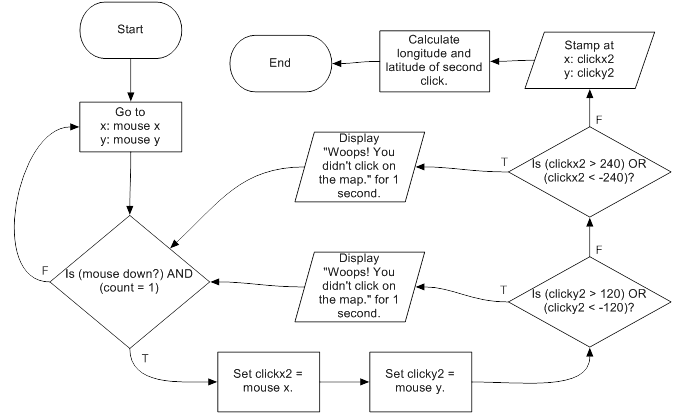




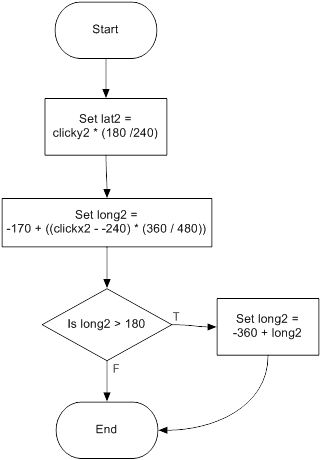
****



**low level – calculate longitude and latitude of second click**

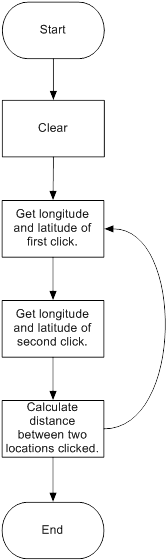
****





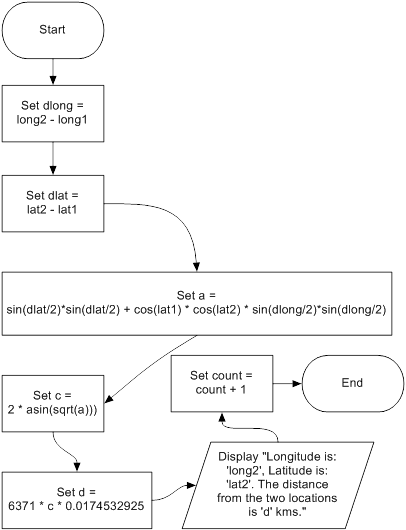


**low level – Calculate distance between two locations clicked**











**TEST CASE**

|  |  |  |  |
| --- | --- | --- | --- |
| **STEP** | **DESCRIPTION** | **PASSED** | **COMMENTS** |
| First click | The first click should stamp the sprite at the location of the click and display the longitude and latitude. | Yes | - |
| Second click | The second click should stamp the sprite at the location of the click and display the longitude and latitude, as well as the distance between the first and second click. | Yes | - |
| Third click reset | The third click should reset the script back to the first click, treating the third click as the new first click and clearing the 2 current sprites on the canvas. | Yes | - |
| Longitude and latitude calculation | Conversion from x and y co-ordinate to longitude and latitude should be correct, and should also account for clicks to the far left and right of the map. This can be checked by clicking locations of known longitude and latitude which should roughly be the same. | Yes | Since our precision with clicking a specific location is limited, we are allowed an error margin of ~155km. |
| Clicks off the map | The app should only output a longitude and latitude when the mouse click is on the map, otherwise it should display an error message, done by setting a range for the x and y axis. | Yes | The sprite will stamp at the initial position of the click. Dragging the mouse will simply delay the displaying of the longitude and latitude. |
| Mouse dragging | When left click is held down on the map and dragged around, it should not keep stamping the sprite at every new co-ordinate. Instead, every time the mouse is clicked, there should only be one sprite stamped. | Yes | - |
| Distance calculation | Make sure the calculation of the distance and the conversions are correct by clicking the locations of two known places where you know the distance between them. | Yes | Since our precision with clicking a specific location is limited, we are allowed an error margin of ~155km. Because of this, the error margin for the distance is ~310km. |

**TEST data**

|  |  |
| --- | --- |
| **TESTING** | **TESTS** |
| Amount of clicks | -Keep clicking around the map (Should only be a maximum of two sprites stamped on the canvas at any one time). |
| Clicks off the map | -Click at y > 120  -Click at y < -120  -Click at x > 240  -Click at x < -240 |
| Mouse dragging | -Drag the mouse around the map (Should only be one sprite stamped while dragging). |
| Locations | -Melbourne, Australia 37° :47 m:0 s S, 144° :58 m:0 s E  -Tokyo, Japan 35° :40 m:0 s N, 139° :45 m:0 s E  -Amsterdam, Netherlands 52° :21 m:0 s N, 4° :54 m:0 s E  -Colombo, Sri Lanka 6° :55 m:0 s N, 79° :52 m:0 s E  -Antananarivo, Madagascar 18° :55 m:0 s S, 47° :31 m:0 s E |
| Approximate distances (kms) | -Melbourne to Tokyo 8179  -Melbourne to Amsterdam 16534  -Melbourne to Colombo 8349  -Melbourne to Antananarivo 9352  -Tokyo to Amsterdam 9288  -Tokyo to Colombo 6850  -Tokyo to Antananarivo 11406  -Amsterdam to Colombo 8375  -Amsterdam to Antananarivo 8923  -Colombo to Antananarivo 4560 |

