**ICS2O Culminating Project**

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**Program Description**

My program is a utility program. These are the utilities:

* A slope calculator
* A temperature converter
* A Trigonometry function calculator
* A CD drive controller
* A quadratic function solver

­­**IPO Table**

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| Slope Calculator:  Coordinates | Slope = Δy / Δx | Slope |
| Temperature:  Celsius OR Fahrenheit OR Kelvin | If c entered and others =0 Then  K = c + 273.15  F = c + 9/5 + 32  ElseIf F entered and others =0 Then  C = (F – 32) x 5/9  K = C + 273.15  ElseIf K entered and others =0 Then  C = k – 273.15  F = c + 9/5 + 32  Else  Display invalid input label  End If | The two other calculated values |
| Trig Functions:  Angle AND degrees OR radians AND buttons | If degrees selected Then  Calculate radians from degrees  End If  When sine clicked Then  Output sin of input  When cosine clicked Then  Output cos of input  When tangent clicked Then  Output tan of input | The calculated sine, cos or tan |
| CD Drive:  Buttons | When open clicked Then  Open cd drive  When close clicked Then  Close CD drive | The CD drive is opened or closed |
| Quadratic Solver:  Coefficients | Calculate discriminate from coefficients  If discriminate < 0 Then  Output “No real roots”  Else  Calculate roots  Output roots  End If | The roots of the equation |

**How concepts will be used**

Variables will be used in every utility to store the input and output values. Math operators will be used extensively as most of the utilities will involve calculations. Selection constructs will also be used extensively to process input before calculations take place. An example of this would be calculating the discriminate in the quadratic solver and checking whether it is greater than, lower than or equal to 0. This makes different calculations happen based on how many zeroes the equation has. Repetition constructs are not necessary for the code to be functional, but I will add one to show that I know how to use them. I will use single arrays to store the coordinates for the slope calculator and to store the two roots in the quadratic solver.