**Outline**

Design and implement a math calculation program using SWT widgets according to the following specification.

A list of widgets and links to the Javadocs is available from: <https://www.eclipse.org/swt/widgets/>

1. The program will get an integer number from the user using a “Spinner” widget
2. The user will select a common math function to calculate using a “List” widget. The list should contain at least five different functions. The factorial function is an example of a common math function. Google “common math functions” for ideas about other functions.
3. The program will implement each math function in a different block of code.
4. The result will be calculated based on the selected Spinner and List values.
5. The result will be returned to the user through a “Text” widget.
6. Widget input and output will be organized into a single window with a Display and Shell.

This project will be implemented in teams of three (or four) students. Students will work together to design and implement the code for the project. HOWEVER, students are expected to maintain their own copies of the answers and program code.

Students are expected to share tips and tricks with other teams.

**Level 1: Program Design and Layout (Before Coding)**

1. Research and document the “Spinner” widget. (Refer to examples and Javadocs)
   * Configuration options
   * How do you send & receive data
   * Short Java code example
2. Research and document the “List” widget. (Refer to examples and Javadocs)
   * Configuration options
   * How do you send & receive data
   * Short Java code example
3. Research and document the “Text” widget. (Refer to examples and Javadocs)
   * Configuration options
   * How do you send & receive data
   * Short Java code example
4. Identify at least five common math functions that you will implement. Google “common math functions” for ideas about other functions.
   * List the formula for each function
5. Draw a diagram of the overall layout of the widgets in your interface.
   * Show how you will configure each widget to display in its proper place.
6. List in words (pseudo code or flowchart symbols) the general flow of your program.
   * What you will need to initialize related to variables and the initialization of the initial display
   * The order of things you will collect from user input
   * How you will decide which function to calculate and how you will control this calculation
   * What information you will provide back to the user
   * How you will manage the termination (exit) of the program and closing of the display

**Level 2: Team Organization & Collaboration**

1. xxxxxxx

**Level 3: Code Implementation & Testing**

1. xxxxxxx