## Introduction:

This project will be a material list and price estimator program. The app will allow users to enter a description, quantity, and cost and will provide a total for the list of all the materials. The application will be a Windows Form application. The application will take user input for description, quantity and cost and total the list of materials. The application will be written in Visual Studio using the C# programming language.

## Architecture:

This application will have three layers:

### Presentation layer:

* Graphical User interface
* Error messages

### Application layer:

* Main application logic for calculation

### Data layer:

* DataGrid
* Text file export

## Use cases:

* Create new materials list
  + User opens the application and is presented with an empty list
* Add items to materials list
  + User types a description, quantity and cost into the row
  + User presses enter key to go to a new row
  + User repeats the process as needed
* Calculate total cost
  + User presses calculate
  + User verifies total is correct
* Save materials list to file
  + User presses save button
  + User chooses file path and filename and saves file
  + User verifies file contents are correct
* Clearing materials list
  + User presses clear button
  + User verifies DataGrid is now empty
  + User verifies that subtotal for each line is correct

## UML:

A screenshot of a computer

Description automatically generated

Test Cases:

* Testing DataGrid design element:
  + User adds item(s) to materials list
* Testing MultiplyColumns method:
  + User presses calculate
* Testing add total method:
  + User presses calculate
  + User verifies total is correct
* Testing Save method and button:
  + User presses save button
  + User chooses file path and filename and saves file
  + User verifies file contents are correct
* Testing Clear button and clear method:
  + User presses clear button
  + User verifies DataGrid is now empty
* Testing cell validation logic
  + User attempts to enter non-numerical character in a numerical only column
  + User is prompted with error message
* Testing Subtotal column and method
  + User enters a row of data
  + User verifies that subtotal for each line is correct

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## Summary:

This document outlines the architecture, use cases and test cases, and UML for the material list and price estimator program. The software will be simple to use for beginner users who are not able to use Excel. The application will have a small footprint, taking up less than a megabyte of disk space. The application will also not require the user to install it to use it. Overall, it will be an efficient and accurate building materials estimator.