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| **CS1400**  **Lab #7**  **Captain Jack**  **Version 1.0**  **Introduction**  In this lab, you will write a Graphical User Interface (GUI) program that solves the Captain Jack problem. You should have previously designed the ***Pseudo-Code***, before writing this program, review the ***Pseudo-Code*** that you completed in the previous lab. You will use your ***Pseudo-Code*** to aide in implementation of code for this lab.  **The Problem**  Captain Jack and his crew of pirates arrive in Tortuga after several weeks of plundering the high seas. Since the crew has been at sea for nearly a month, they are ready for a night of celebration. Captain Jack doesn't want to divvy up the treasure just yet; however, he does note (in his pirates’ chest) the total pieces of gold. He gives each man in the crew (including himself and the first mate) 3 pieces of gold and sends them into town to celebrate. After the crew has gone he and the first mate note the total gold (note in his chest) and decide how to split it up among themselves and the crew. Captain Jack decides that he'll take ***12%*** of the total gold. He counts out his gold and hides it in his cabin. The Captain agrees to give the first mate ***8%*** of the **remaining** total gold. The first mate counts out his coins and hides it in his cabin. (***REMEMBER***, Cap’n Jack and the First Mate are ***VERY*** greedy!) The next morning, the gold that is left is divided evenly among all the members of the crew, including Captain Jack and the First Mate. Little does the crew know that Cap'n Jack and the First Mate have already taken a cut! If the remaining treasure can't be split evenly, the coins that are left- over are given to the Pirate's Benevolent Association or ***PBA***. Make sure that the ships auditor accounts for all the gold!  The problem is to compute how much gold each person gets, and if any, how much goes to the Pirate's Benevolent Association. Keep in mind that a piece of gold cannot be split, so if some calculation yields a number that contains a fractional part, you can only give that person the integer part of the value. For example, if your program computed the captain's share as 25.67 pieces of gold, you could only give him 25 pieces of gold, **not** 25.67 pieces of gold. Warning, when you do any calculations do not round up. Simply drop the fractional part. Finally the auditor must be satisfied that all the gold distributed added up to the total gold that the crew started with.  **The GUI Interface**  You should design your own interface for this problem. It need not look like the one shown here, but it must contain the required information.  The interface should also have the following TextBoxes, appropriately labeled:   1. A TextBox for inputting the total number of pirates on the ship. This number will include the Cap’n and the First Mate. 2. A TextBox for inputting the number of gold coins the ship came into port with. 3. A TextBox (disabled) for displaying Cap’n Jack's Share. 4. A TextBox (disabled) for displaying the First Mate's Share. 5. A TextBox (disabled) for displaying what each crew member (including Jack and the First Mate) gets when the gold is divided up in the morning. 6. A TextBox (disabled) for displaying how many gold coins the Pirate's Benevolent Fund gets. 7. A Labels for all the TextBoxes. 8. Display the Auditor’s note that the figures match! 9. A Button the closes the program. 10. Finally, add a Button that will cause the calculations to be performed.   Your program should ask the user for two pieces of information:   * The starting gold the pirate ship came into port with, and * The number of pirates on the ship, including Captain Jack and the First Mate.   Your program should work for any reasonable set of inputs. Here is an example of what your program should produce. With 20 pirates and 1000 pieces of gold:   |  |  | | --- | --- | | **Cap’n Jack** | 160 gold coins (120 + 37 + 3) | | **First Mate** | 110 gold coins (70 + 37 + 3) | | **The Crew** | 40 gold coins each (counting the 3 coins each took into town for 18 crew members) (37 + 3) | | **The PBA** | 10 gold coins (1000 – 160 – 110 – 720) | | **Auditor** | 1000 gold coins counted |   **Writing the Code**  Create Event handlers for the “***Split Gold***” and “***Exit***” Buttons. Before you fill in the code for the “***Split Gold***” Button's event handler, copy the ***Pseudo-Code*** that you wrote in the previous lab, and paste it inside the curly braces for the “***Split Gold***” Button's event handler. This can be done by selecting the ***“File” -> “Open” -> “File”*** menu items and selecting the “***Program.cs***” file in the previous lab. The “***Split Gold***” Button's event handler is where most of the action will take place in your program. Now fill in the actual code statements that do what your ***Pseudo-Code*** asked for.  **Sample Program**  You can find a sample executable program on Canvas in the Lab #7 folder.  **File(s) to Submit:**  Place the entire Project folder, for this lab, into a zip file and name the zip file Lab\_07\_your-initials\_V1.0.zip. For example, I would name my file Lab\_07\_DAF\_V1.0.zip. Submit this assignment as Lab #7 to Canvas.   |  |  |  | | --- | --- | --- | |  | **Grading Checklist** | **C** (correct)  **X** (incorrect) | | # | Program | Submission Points | | 1 | Meets & works to specifications | 6 points | | 2 | Error Free, elegant & efficient | 4 points | | 3 | Pseudo-Code | -3 points | | 4 | Style Guidelines | -2 points | | 6 | Source Files(s) & Formatting | -2 points | | 7 | Project Prolog | -1 points | | 8 | Function Prologs | -1 points | | 9 | Zip Filename | -1 points | | 10 | Lab & Project Names | -1 points | | 11 | Zip File is invalid or will not unzip | Lab = 0 pts | |  | Total Points | 10 | 0-9 | |