

PROG3240 – Business Intelligence

Assignment #2

Submission in groups of 2

Objectives:

- INSERT large amounts of data into a database
- Report on data in “real” time

Description:

You will simulate a live reporting system like those commonly found in automated manufacturing environments. The accompanying documents (BiProjectYoYo.pdf and YoYoNotes.pdf) provide some detail on how the system works, how the simulator works and definitions of the data generated. A YoYo manufacturing simulator is provided, as well as source code to be able to read the message queue.

Requirements:

1. Design a database to store all the data generated in the simulator. You should consider all the requirements for reporting to determine the best design for the database.
2. Write a program to read the data from the message queue and write it to the database.
3. Create a live report (Windows Forms, WPF, ASP.NET Web Forms, or ASP.NET MVC) with the following requirements:
 - a. Allow the user to choose any one, or all, of the products to perform the calculations for the report. The choice may be changed any time, and the report should be updated immediately upon change.
 - b. Use the MS Chart control to display a Pareto diagram showing the reasons for rejection (rework and scrap combined).
 - c. Make sure to show the actual numbers on the chart.
 - d. Display the following information based on the chosen product (or all products):
 - i. Total parts molded
 - ii. Total parts successfully molded
 - iii. Yield at Mold: $(\text{Total parts successfully molded}) / (\text{Total parts molded})$
 - iv. Total parts successfully painted
 - v. Yield at Paint: $(\text{Total parts successfully painted}) / (\text{Total parts successfully molded})$
 - vi. Total parts successfully assembled
 - vii. Yield at Assembly: $(\text{Total parts successfully assembled}) / (\text{Total parts successfully painted})$
 - viii. Total parts packaged
 - ix. Total Yield: $(\text{Total parts packaged}) / (\text{Total parts molded})$
 - e. The data should be updated automatically using a timer or manually using a button on the report.

4. You should consider the following in your solution, and discuss your approach to solving the issues:
 - a. How well does your solution scale with respect to reading the queue and writing to the database?
 - b. How well does your report respond to an update request? Is there a point when the wait for an update is too long?
 - c. Do the data collection and reporting functions conflict with one another, affecting each other in performance?

Demonstrate:

- Complete solution

Hand in:

1. The complete solutions. Make sure you comment appropriately, especially the header comments.
2. A write-up discussing the issues in point 4. You should talk about the specific problem, and what you did to address it. If you were not able to address the issue, you can discuss what might be an improvement to your solution.
3. Scripts to create database and tables.