**Code size and Design Size measurement**

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**Project Name**: Chemistry-calculator-main

**Project Report Table**:

This Table show the number of per classes NCLOC,CLC,BLC,LOC,DD,TotalBytes,Methods,Cyclomatic\_Complexity,Halstead,s Approach

NCLOC- Number of comments Line

CLC-Comments Line

BLC-Blank Line of Code

LOC-Line of code

Table

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**Total output of Project**

Total LOC: 4032

Total Comment Line: 149

Total Blank Line: 684

Total Data Declaration: 460

Total NCLOC: 3199

Total Density of comments: 3.695436507936508

Number of bytes: 196821

Total CHAR: 188910

Total methods: 390

Total classes : 27

Total interfaces: 1

Weighted or methods average per class: 13

Total Number of packages: 2

Project Cyclomatic complexity: 328

Total Halstead's Program Volume: 2926807

Average Halstead's Program Volume per class: 108400

**Class Name vs NCLOC, CLC, BLC stacked column** :

Below stacked column say that how much NCLOC, CLC, BLC contain per class within the Chemistry-calculator-main project.

A picture containing chart

Description automatically generated

**Class Name vs LOC Bar Chart**

LOC means Line of Code, The Bar Chart show the class vs LOC for every classes, we can gather knowledge from this graph that how much line consist in a class and total line of code within whole chemistry calculator project.

Chart, bar chart

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**Class vs Data Declaration**

Data Declaration per class show this below line graph .Data Declaration means that how much data declare within classes but not assigned values.

Chart

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**Per class complexity:**

Cyclomatic complexity is a software metric (measurement) used to indicate the complexity of a program. It is a quantitative measure of the number of linearly independent paths through a program's source code. Based on the numbers given per method in the source code, one can easily tell if the code is complex or not. We can say that a program per methods class is indicate a Cyclomatic complexity. Normally cyclomatic complexity measured using this steps-

1.Generate the Control flow graph from program

2.then define the number o nodes and arc(edges) and also decision nodes

3.After computing Step 1 and 2 then we used four approach for measuring the cyclomatic complexity like as v=e-n+2p, v=d+1, v=number of R.

We know that this step 1 is very difficult to apply so we can select to per methods class process for find out the cyclomatic complexity measure easily.. We build a program for measure the per methods in class approach.

*The Cyclomatic Complexity within the chemistry calculator project below show using bar graph*.

Chart

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**Class vs Halstead approach**

Halstead’s Approach is a another approach for code size measuring ,It μ1 = Number of unique operators, μ2 = Number of unique operands ,N1 = Total occurrences of operators ,N2 = Total occurrences of operands and finally calculated V = N × log2μ where μ=( μ1+ μ2) and N=(N1+N2)..We use program to calculated it easily..

The Halstead’s volume per classes show the below using bar graph for chemistry calculator projcet

Chart, bar chart

Description automatically generated

**Per class methods**

Number of methods or operations measure in automated to make a program. weighted methods per class (WMC) also measure based on Total methods within Software system.

Below the graph for class vs methos for u understand the design size measurement

Chart, bar chart

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