

Think Intensively To Think Critically.

Name : Basant Gera* , Student ID : 40082433 , GitHub URL : https://github.com/basantiscits/SOEN_6011, Function Assigned : Standard Deviation , Function Assigned Problem 5 :F1: $\arccos x$, Function Assigned Problem 7 : F2: $\tan x$

Submitted to Pankaj Kamthan*

Objectives

Objectives for the poster:

- Critical decisions made during the project and why those decisions were critical (Based on function assigned to me).
- Lesson learnt by doing the project for which function assigned to me σ **Standard Deviation**.
- Lesson learnt by doing the review of function assigned to me in problem 5 **F1: $\arccos x$** and problem 7 **F2: $\tan x$** .
- Lesson Learnt from Others.
- Tool Used for SEP.

Critical decisions made during the project and why those decisions were critical

Important decision taken are as follows : (Based on function assigned to me)

- **Done Research on Standard deviation and choosing the right formulas** : The Standard Deviation is a measure of how spread out numbers are. It is symbol σ the Greek letter sigma. The formula is easy and is square root of variance. The standard deviation is a statistic that measures the dispersion of a data set relative to its mean. It is calculated as the square root of variance by determining the variation between each data point relative to the mean. Here are 2 formulas which we have used over to make calculator which are as follows :

Population Standard Deviation

$$= \sigma \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

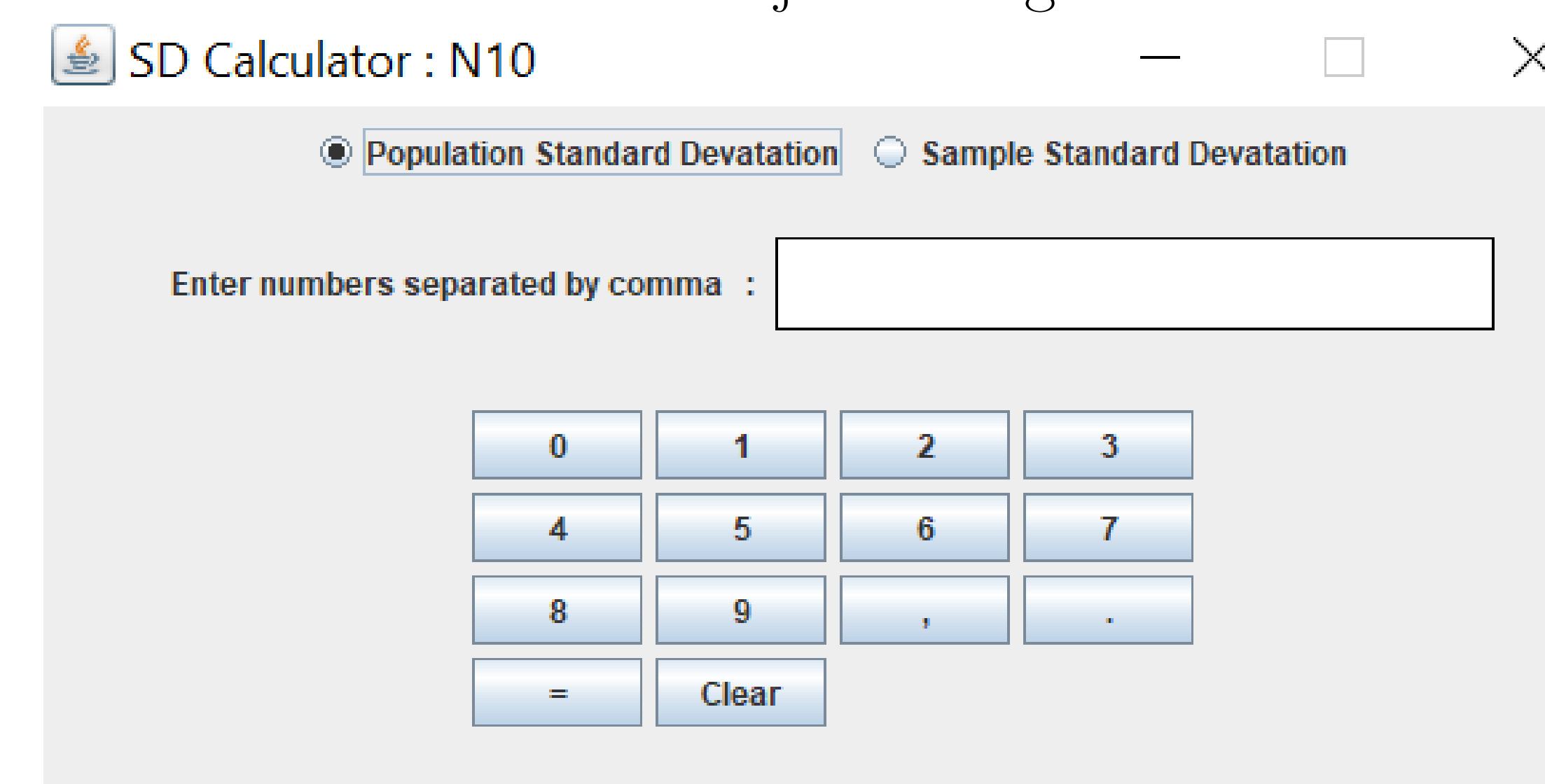
Where n can not be Zero. **Sample Standard Deviation**

$$= \sigma \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Where n can not be Zero or 1.

- **Choosing Graphical Interface over Textual Interface** : I find graphical interface much more easy to use apart from that less error prone than textual interface. Below is the image of the

calculator which I made in java swing is as follows :



- **Understanding not to use In-built function of Java** : Despite of not using Java In built function tried to make own function of square root and Power to check what it takes to make it and how complex and deep enough they are.

Lesson learnt by doing the review of function assigned to me in problem 5 **F1: $\arccos x$** and Problem 7 **F2: $\tan x$** .

- **Learnt Lambda expression** : Lambda expression is feature of java 8. It is basically express instances of functional interfaces. for e.g $(int x) \rightarrow System.out.println(2 * x);$.
- **Tried to debug the code in java 8 and learnt debugging in depth** : Tried to use watch point and learnt debug in depth.
- **Learnt to calculate how exponential is calculated with that learn how inverse of cos works in depth**
- **Learnt Code review Strategies from req. to end** : Learnt how to review code in JUnit too .
- **Learnt chekstyle and use of formatter** : Learnt how google java style works on eclipse .
- **Learnt how to calculate tan in java** : Learnt how tan works in java without using in built functions.

Lesson Learnt from Others.

- **Use of java do for better understanding** : Yes it may sound bleak but when reviewing some code is not easy task. I would not able to know what other functions is doing and try to debug it to understand what the function is trying to do . So make sure when ever you write code just write java doc on it.
- **Following rules and ethics which is discussed in the scrum** : What ever discussed in team meeting is important since following that make you in sync and you would no what is write and what is wrong and what needs to be followed.
- **Why best is required from you ?** : You know what is best for you and how much you can handle. Never take those task which you cant address or not able to do it. Try to make your job easy and clean and do challenging work always.

Tools used in SEP.

- **Eclipse Neon : For Java** : 
- **Codacy : A review Tool** : 
- **Latex : Overleaf** : 
- **J Unit 4.0 : Testing** : 

References.

- [1] https://en.wikipedia.org/wiki/Standard_deviation
- [2] <https://link.springer.com/article/10.1007/s10958-015-2539-6>
- [3] <https://sback.it/publications/icse2018seip.pdf>
- [4] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3328792/>

Standard Deviation Graph

Standard deviation is a number used to tell how measurements for a group are spread out from the average (mean), or expected value. A low standard deviation means that most of the numbers are close to the average. A high standard deviation means that the numbers are more spread out.

