Write a multithreaded console application that computes some equation based on "some complex mathematical formula". In your mathematical equation, there must be operands and operators. Hardcode your mathematical equation in application but provide operands from user input to the application. Select an equation of your choice such that you should compute at least 4 to 6 operations in in parallel to demonstrate concurrency.

Explanation of how to implement the **(1) complex (2) multithreading** app is given below with some sample equation. (Use your own equation, do not use the sample equation):

(1) Sample Equation: e.g., calculate resultant of vectors using parallelogram where $R = \sqrt{P^2 + Q^2 + 2PQ\ \cos\theta}$ and $\alpha = \tan^{-1}[\frac{Q \sin\theta}{P+Q\ \cos\theta}]$ [Reference URL: https://tinyurl.com/y3skujvz]

(2) Using multithreading approach in java. For example, calculate R and α by providing values of P, Q to your program via user input and then multithreaded application must computes the resultant by calculating following in 6 threads (T) : T1 = P^2, T2 = Q^2, T3 = 2PQ, T4 = $\cos\theta$, T5= $Q \sin\theta$, T6 = $P + Q\cos\theta$ and then finally calculating R = $\sqrt{T1 + T2 + T3}$ and α = $\tan^{-1}[\frac{T4}{T5}]$. Your marks of the assignment will depend upon the correct usage of multithreading (using at least 5 to 6 threads) and the complexity of algorithm / formula used.

Task 1 (Assignment 3):

Implement java-multithreading app using threads class and runnable interface.
Sample code is here: https://www.geeksforgeeks.org/java-threads

Task 2 (Assignment 4):

Implement java-multithreading app using java executer framework.
Sample code is shared with you in class slides. Moreover, book chapter 23.

Important Note:

1. Last date of submission is **Tuesday, 29th November 2022 – 11 AM.**
2. For any late submission (4 DAYS late) penalty will be deduction of 0.5 marks each day.
3. After THOSE 4 DAYS, no submissions will be accepted and you will be marked straight zero.
4. Students are required to submit the assignment individually.
5. Plagiarism, if detected, will result in zero marks.
6. Assignment must only be submit via slate or google form or what so ever instructed by the teacher.
7. Submit the assignment after making a single zip archive of the assignment files. Submit in "zip folder only" no rar, no any other format is accepted.
8. Folder hierarchy:

```
ZipFile:
|---Assignment3
    |--- Doc (MS word document  report for Ass 03)
    |--- Code (.java files)
    |--- Binaries (.class files)
|---Assignment4
    |--- Doc (MS word document  report for Ass 03)
    |--- Code (.java files)
    |--- Binaries (.class files)
```

MS Word document report containing all screen shots of application working along with textual descriptions for explaining the screenshots in /doc folder, generated source code in /code folder.

9. Archive the assignment and name it "**FASTAssign3-4YourRollNo.zip**"
10. Cover Page of Assignment document must contain: Student name, Roll no, Date of submission.
11. There is only one submission allowed.