Operating Systems Lab (18CP301P)

Read Me File

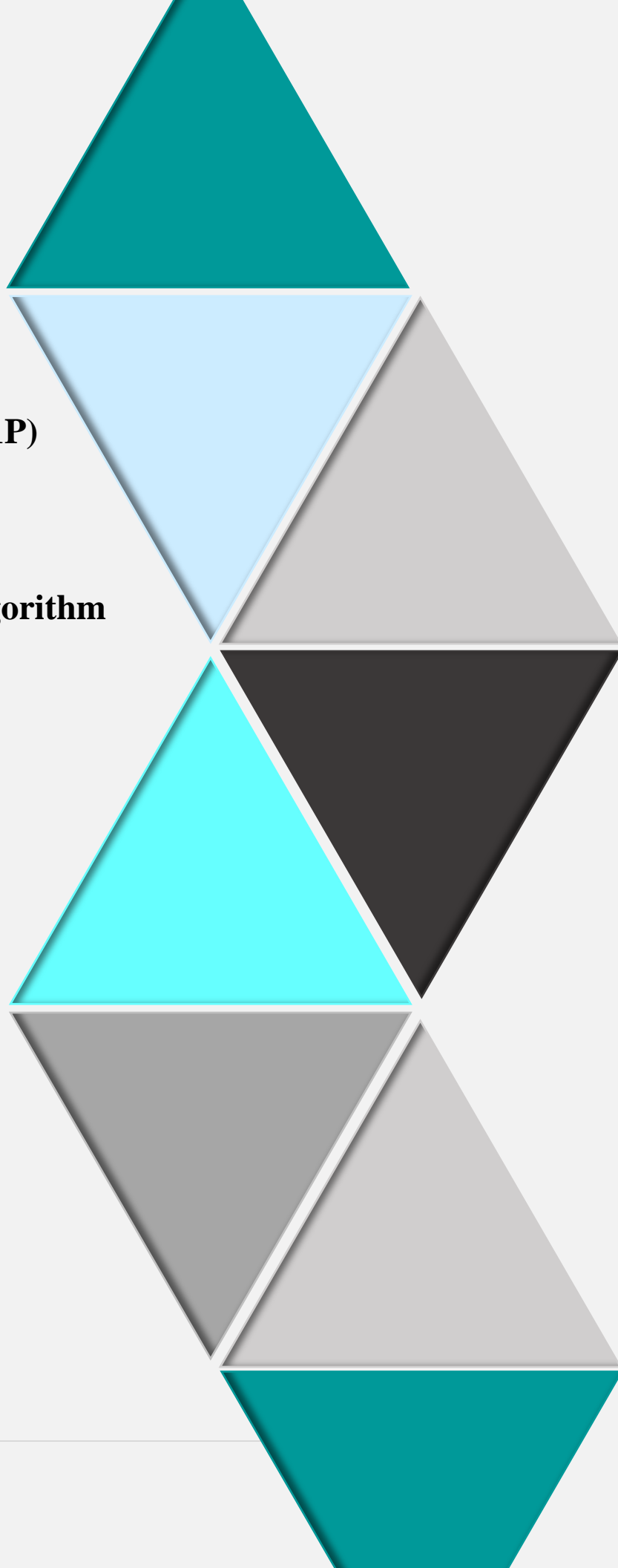**Project Title: Disk Scheduling Algorithm**

Team: 53

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Team Members: Hetal Ganatara (18BIT029)

Ishan Mistry (18BIT033)

Alister Rodrigues (18BIT041)

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IDE (Integrated Development Environment) Installation:

For the successful implementation of the project, our team has used the eclipse IDE and Java Programming Language. Java Programming Language is the most efficient ad secure language and it has major framework or multiple packages for the GUI development.

To implement the codes and import the libraries we will need Eclipse IDE. The installation process includes:

- Install NetBeans IDE, version compatible above 12.1.
- Install Java interpreter with eclipse, version compatible above jdk 11
- Build a java src workspace successfully.
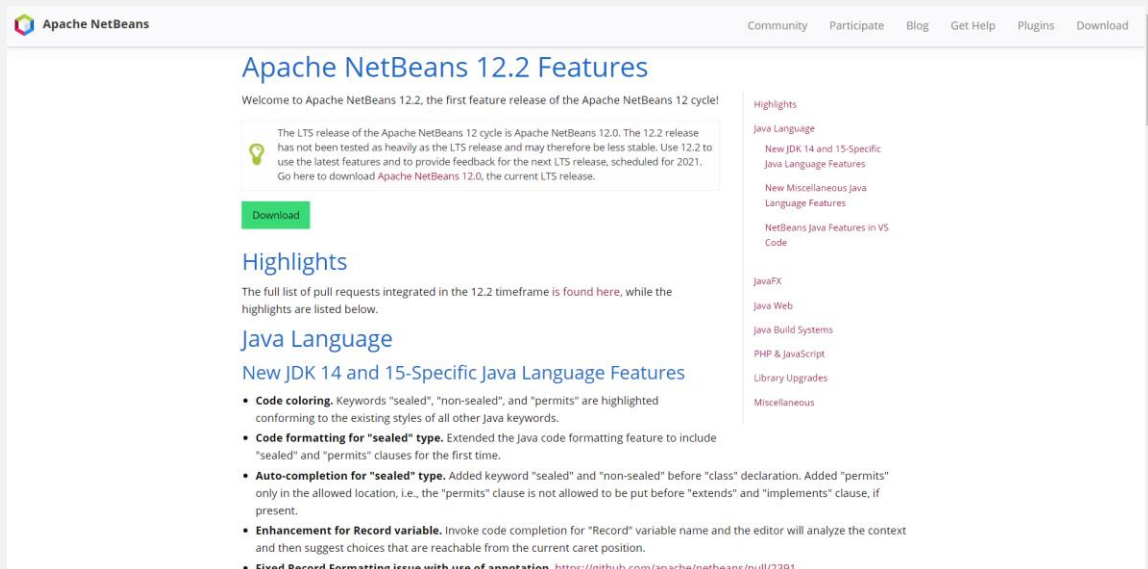- Creating your first Java Project.

1. Installing NetBeans IDE:

We have used NetBeans LTS version 12.2 which is one of the latest versions of eclipse. There has advancement in this version, as every three months they update the system.

a. Please visit this site to download: https://netbeans.apache.org/

b. Please click on the download button on the top right corner of the window.

c. Click on the download button

d. Click on the HTTP link and the software will start downloading as you can see in the bottom left corner.
e. After the software gets downloaded
f. Install the NetBeans software in the C or any other directory you want.
g. After the software gets installed. Launch the software.
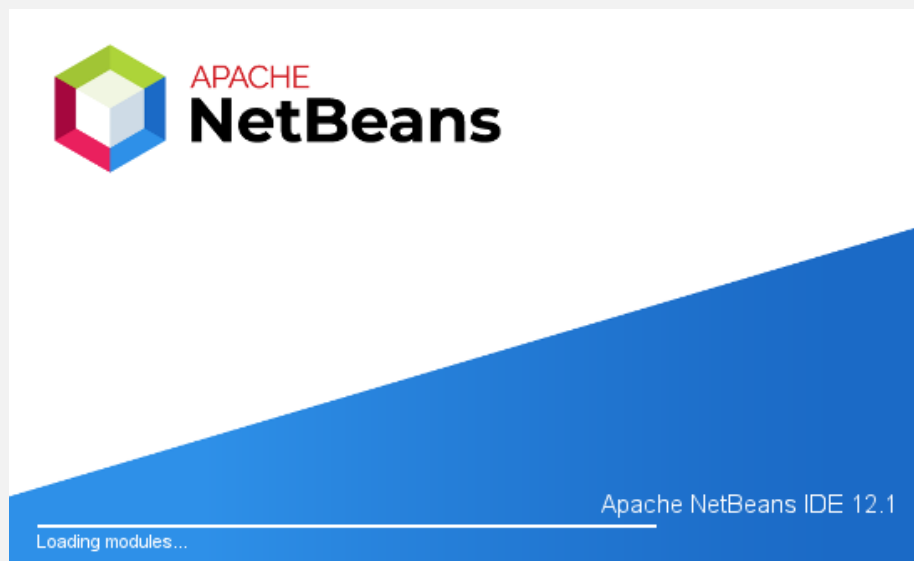
h. Once you launch your software you can set-up your workspace.
i. While setting up the workspace we would recommend you to setup the workspace in either E: drive or any other place apart from C: drive. This will help your heavy threads and error to be detected smoothly. Also, once the GUI is ready it will be easy you to run such heavy file seamlessly.

2. While your NetBeans IDE is ready to run and now let's create our first project
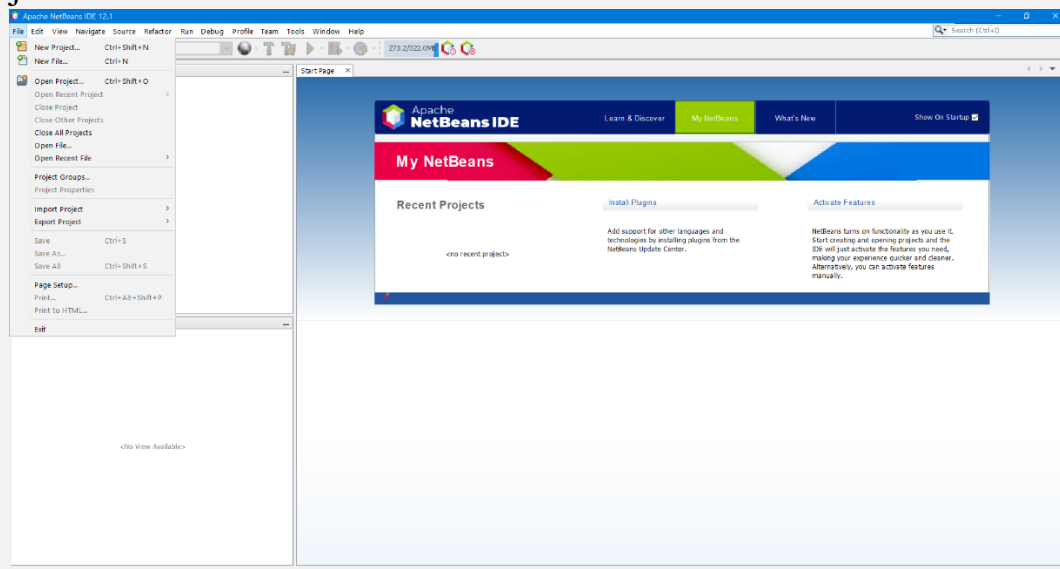
a. Click on the new project
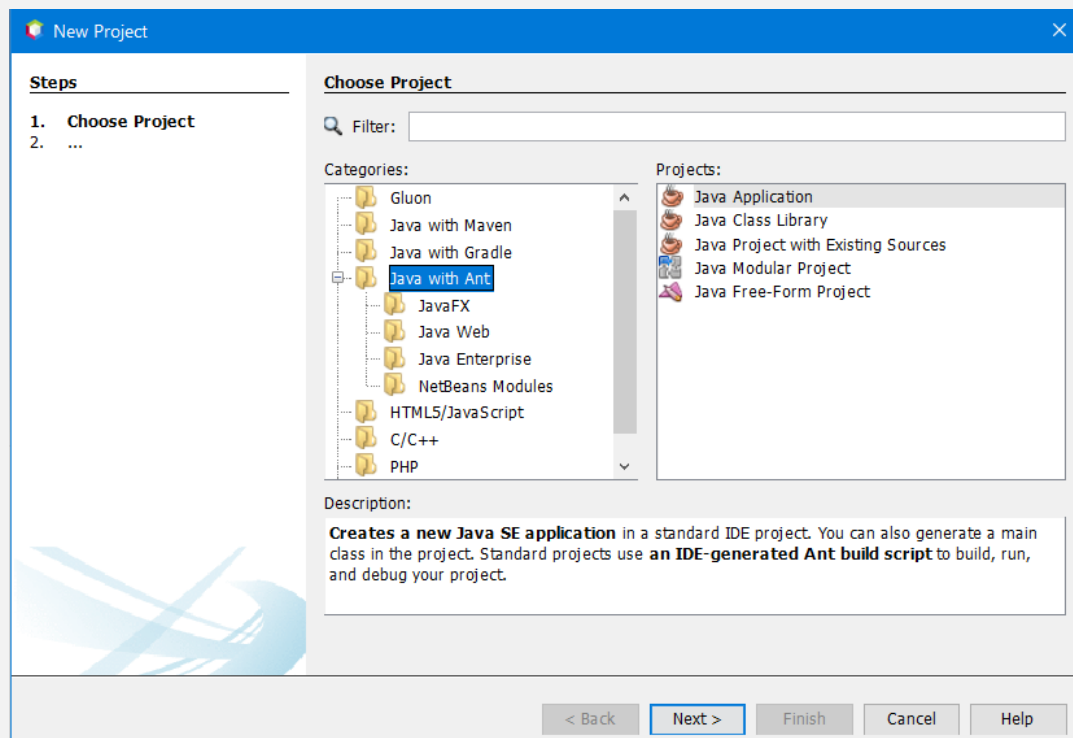
b. Click on next button.
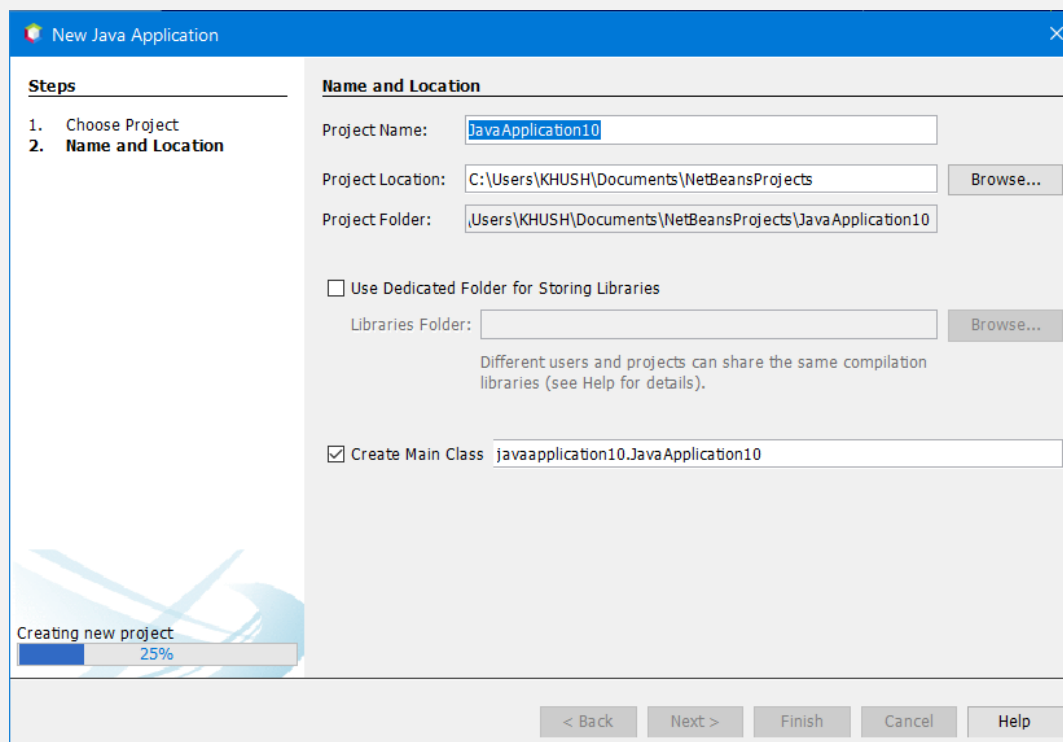
c. After processing gets completed click on finish button
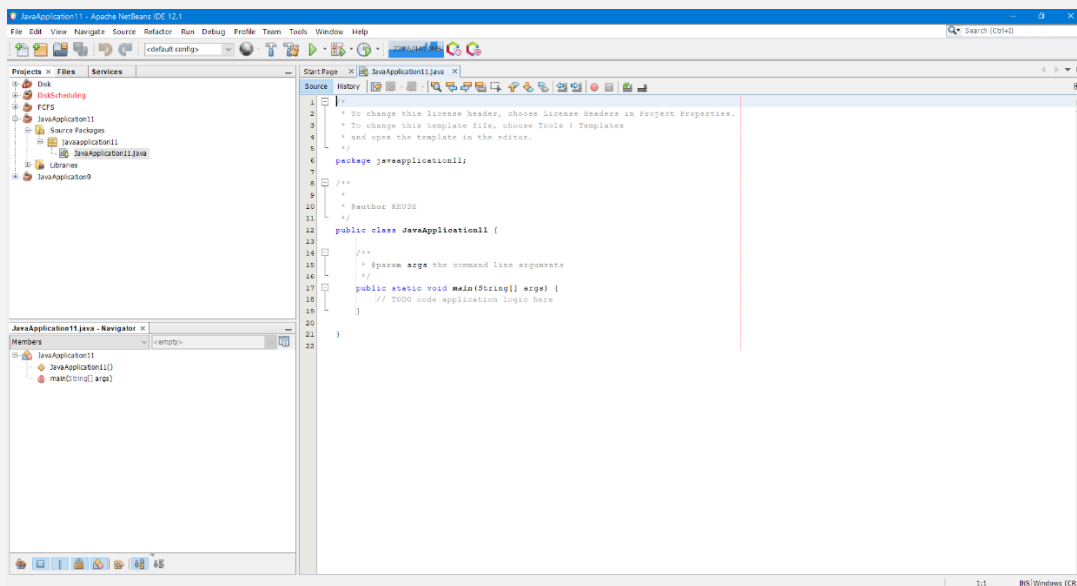
d. And here is your window of your project to write your code.

3. Now you have created your first java project, now let us write some code into it. But to run this code we must import some external libraries that do not come predefined with the IDE. So, let's download those libraries and then set a class path for it.

Library Installation:

For this project we have used 3 external libraries, out of which 1 can be directly downloaded from the NetBeans IDE interface and other two can be downloaded from their respective web pages and then attach their classpath to our Operating System Workspace.

1. Installing SWT Designers kit:

This kit is eminent part of our project. We need to download this kit to use the **Windows Builder** feature provided by the Java Developers and can create **UI** of our desktop application with **Drag and Drop** method and then the parser parses the generated codes for us. This method saves a lot of time rather than writing a tedious code.

a. **To check whether you have pre-installed SWT Designers kit.** Go to File New -> Other. The "select a wizard" window pops up.

Double click in Window Builder folder and then to Swing Designer subfolder.
Click to the Application Window and then click Next.
Give a Name for your new window and then click Finish. The Source code of the new Window pops up.
Press Run (the "Play" icon of the toolbar) to run your newly created window.

b. **If you don't have pre-installed SWT Designer kit.**
Go to Help -> Install New Software -> From the **work with** drop select any one Option -> Find for SWT Designer and install all the files
Voila you are done setting up the your SWT designer.

2. Installing and Building Path for JFreeChart:

The JFreeChart kit or set of jar files is one of eminent part of the visualization portion of our project. This is an opensource .jar file created by the Java Developers for the ease of the graph visualities and dataset analysis and comparison charts etc.

a. **The Method to download JFree Chart:**
Search for jfree.org online -> Click on the 1st link (that says JFreeChart – jfree.org)
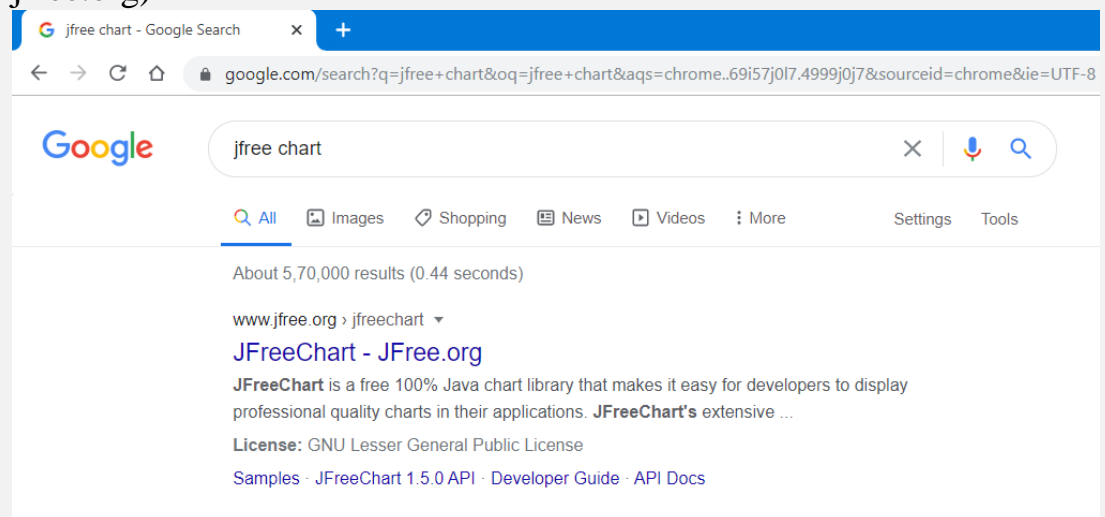
Click on the Download tab -> It will redirect you to the GitHub repository -> Click on the file with **(.zip)** extension -> Save the downloaded file anywhere in your computer.

Extract those (.zip) file -> Extract it at the place where you have stored your project for easy fetching.

b. **Adding this library in your NetBeans IDE:**
   1. Open your IDE and go to tools tab in menu bar. And select Libraries option.
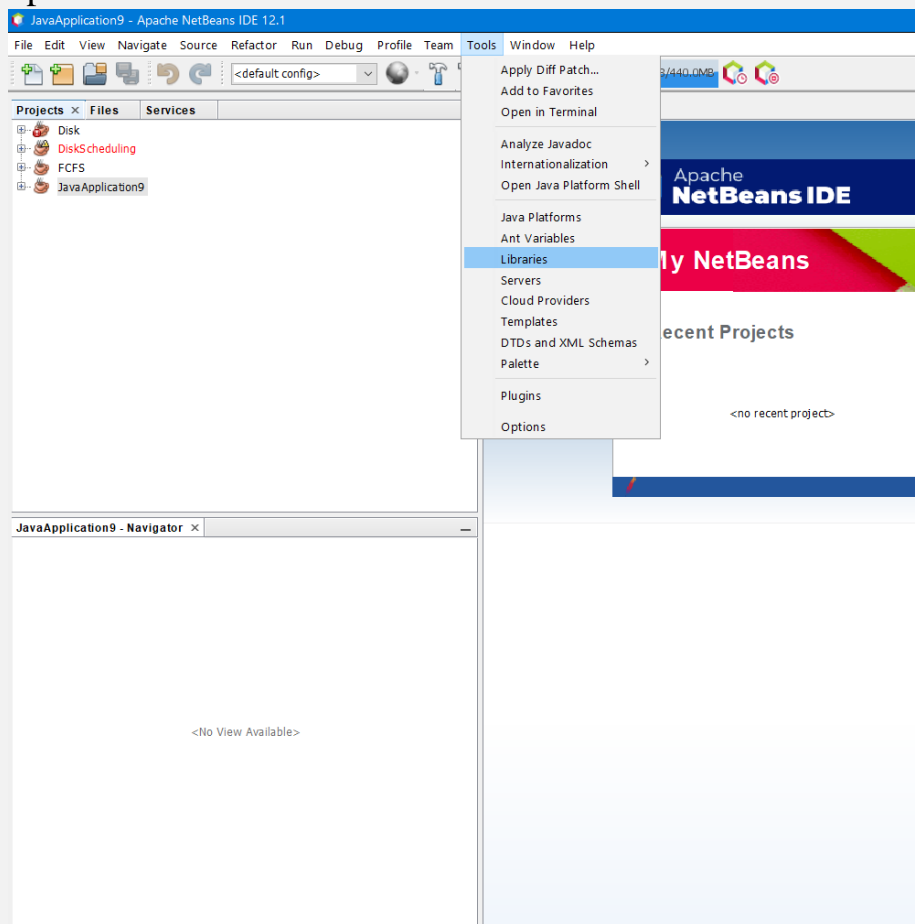
   2. Ant Libraries window will appear and click on the new library option.
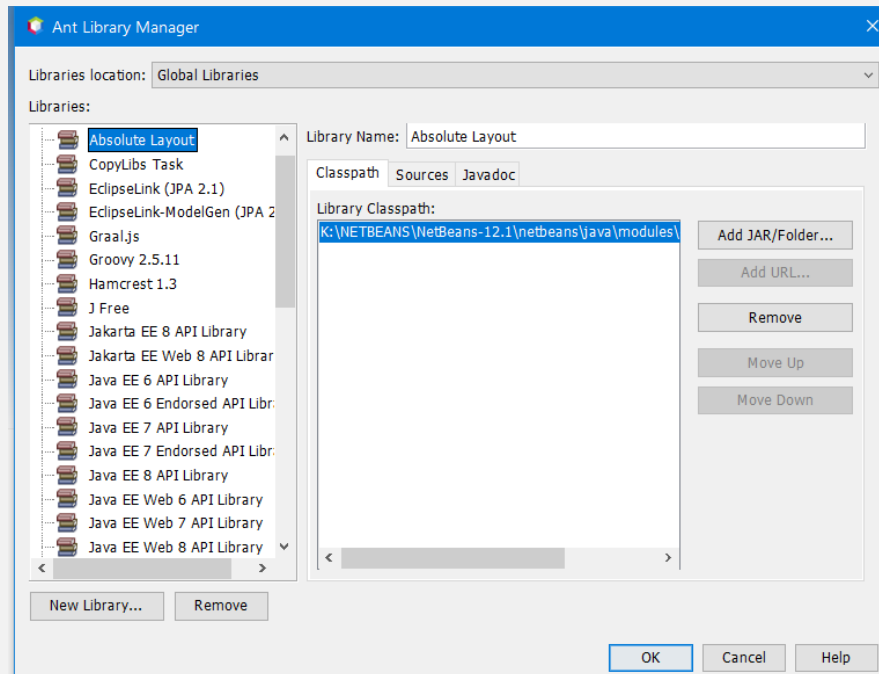
3. New library dialogue box will appear. Click on OK
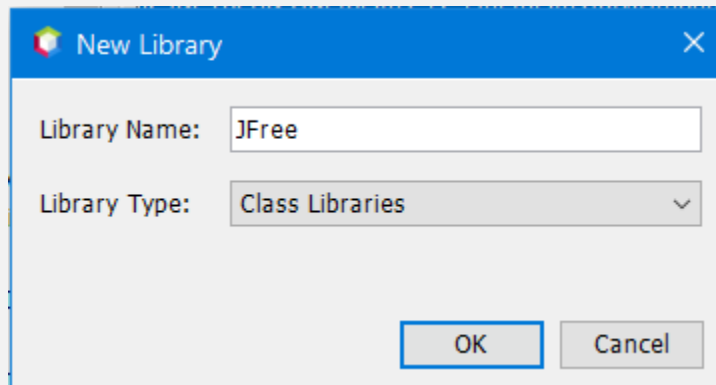
4. Library is created. Now we must add .jar files. Click on Add JAR/Folder option.
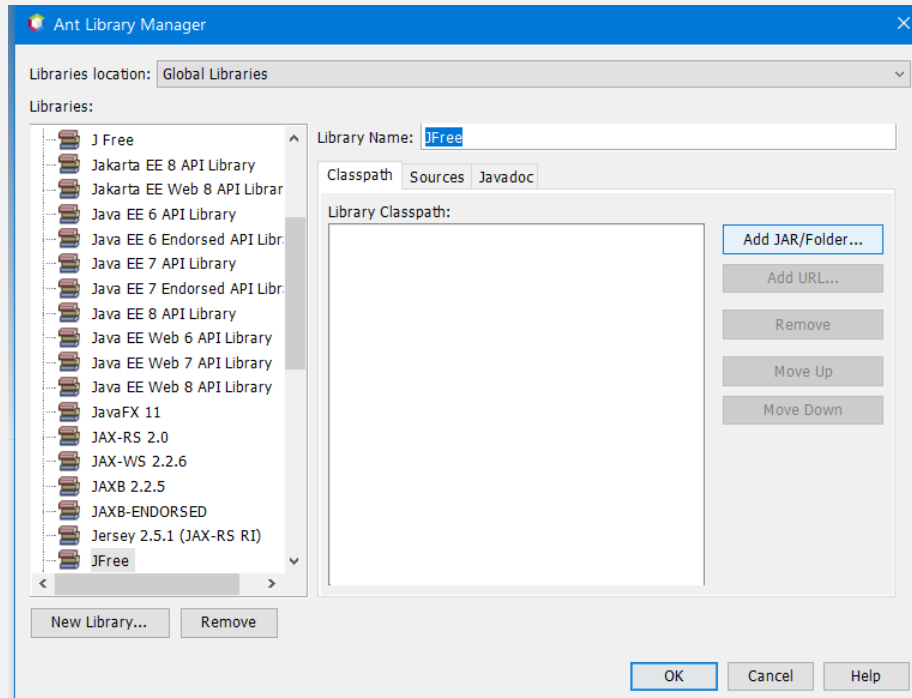
5. Go to the place where you extracted the .zip file of your library.

6. Select all jar files and import it.

7. All the Jar files are imported and consecutively our whole library is also imported. Click on ok.

Hence our library is installed and imported in our IDE. For crosscheck, Click the dropdown arrow on the left of the project -> Click the drop-down arrow on the left of **Referenced Libraries** ->JFreeChart Libraries would have been installed.
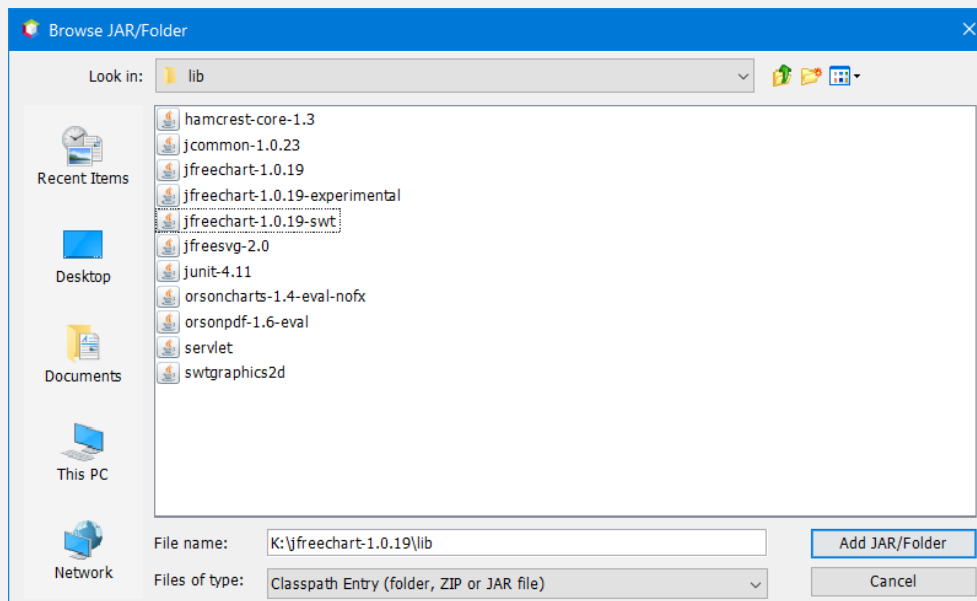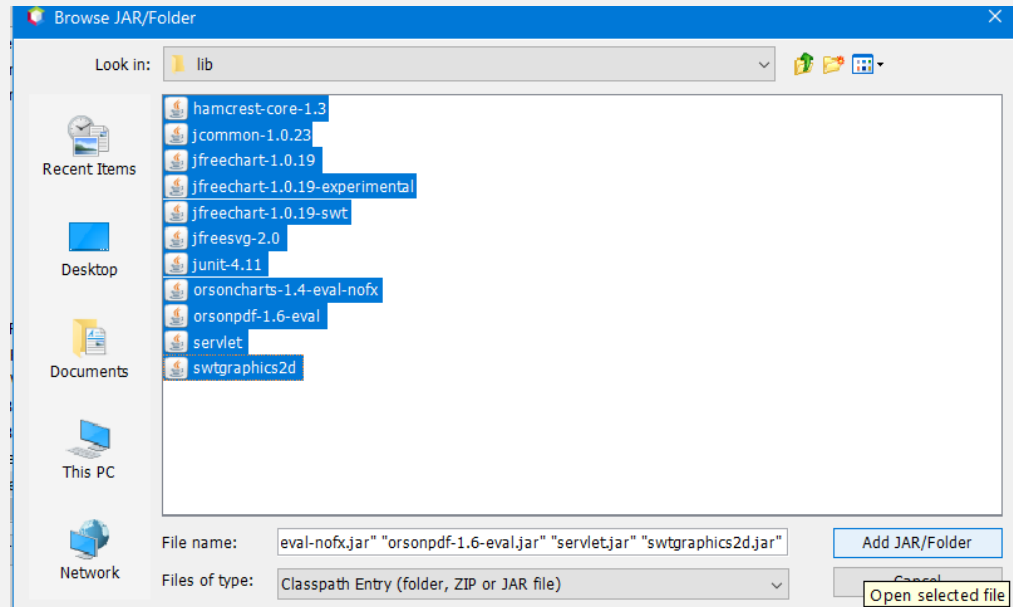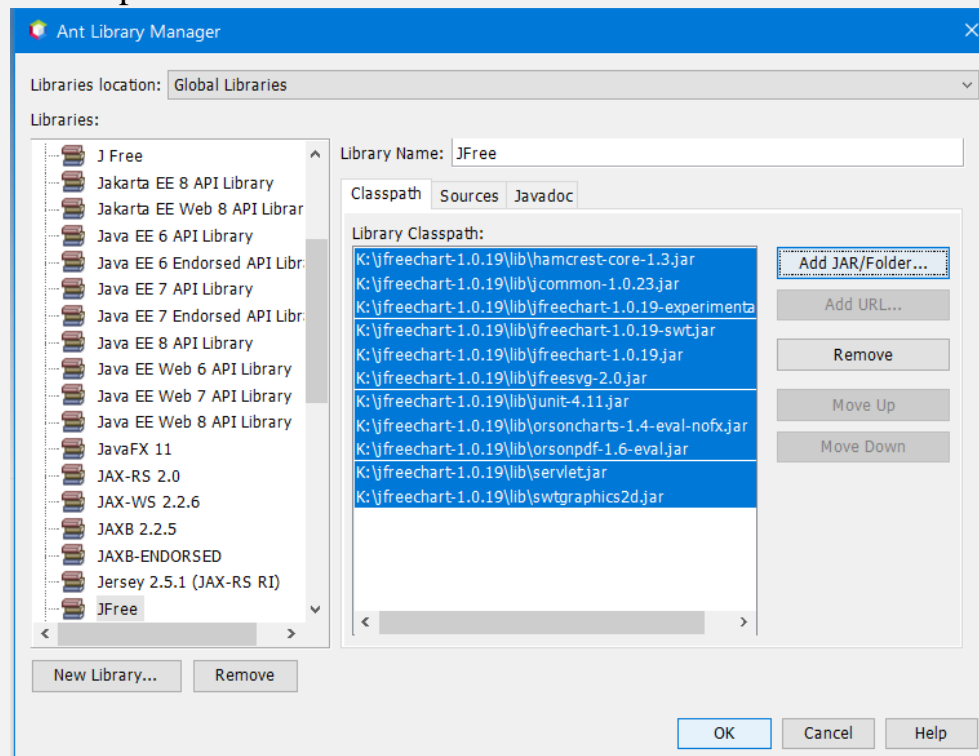
Other than, above mentioned External .jar files we have used some inbuilt libraries:

1. **Javax Swing Package** for creating and viewing desktop app.
2. **Java AWT Package** for drawing and setting dimension and external layout in the Desktop App.
3. **Javax Windows Builder** method to create the visuals in the GUI.
4. **Java language Exception package** to handle all the possible exceptions in the code.
5. **Java language Thread class** to change between multiple JFrames smoothly and effortlessly.

Extraction and Running of Project:

1. Please download the zip file of our project.
2. Extract it in the workspace you have chosen for you IDE.
3. Open your IDE.
4. Please select our project file named as Disk Scheduling.
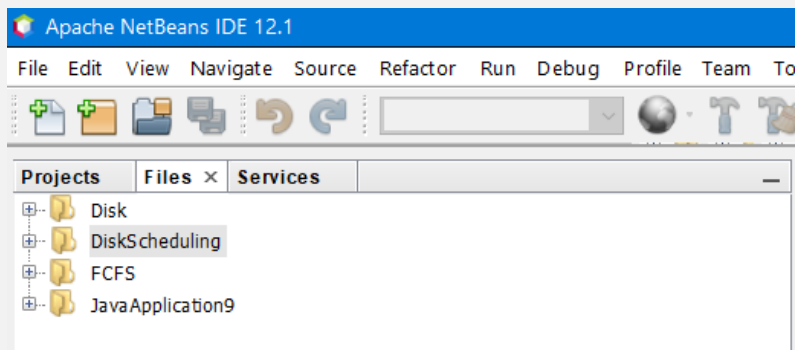
5. Go to projects tab. Select Disk Scheduling
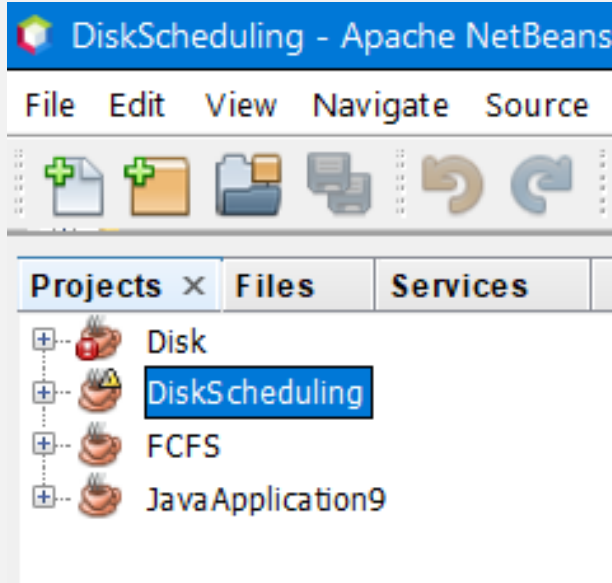
6. To see all the java files expand disk scheduling go to source packages inside it go to disk scheduling package expand it and you fill find you java files. Double click on any one of them to see or edit the code.
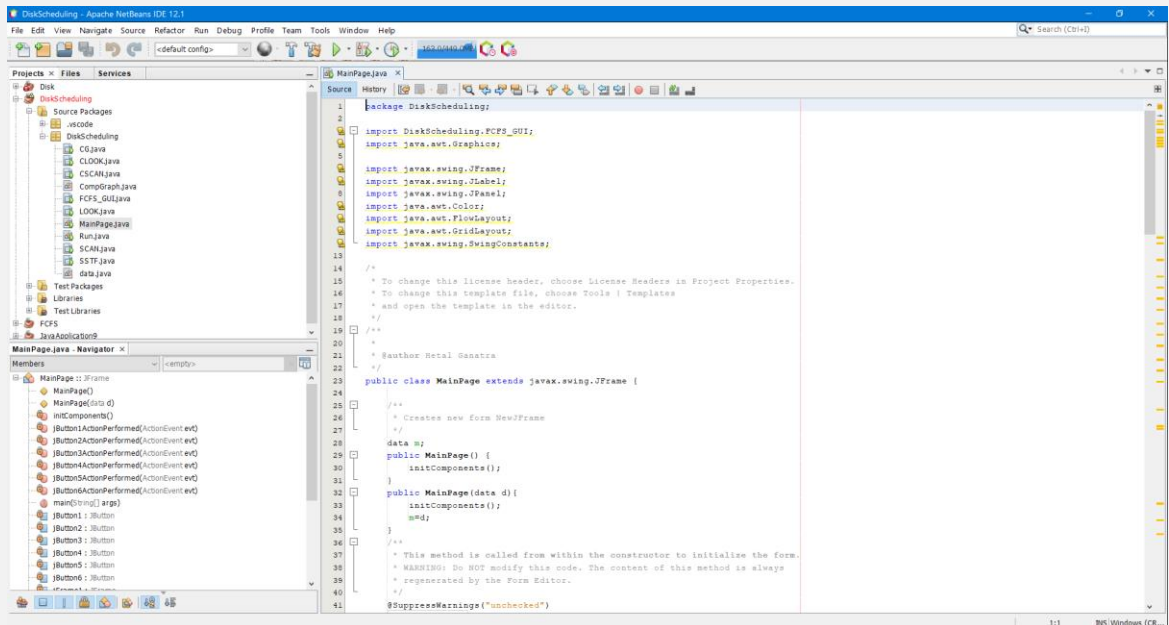
7. To run the project, click on the play button and the main project window will appear.

8. Select any algorithm and you are good to go!!!

Conclusions and Enhancements in projects:

All the above algorithms and tabs are running properly with no errors in the code. Through this project our team got the chance to learn following things given below:
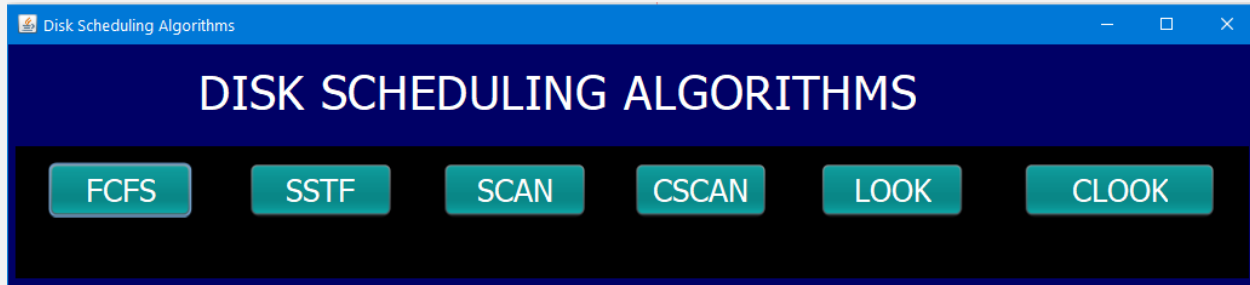
- We learnt that with teamwork we ca achieve our goal in limited time
- We learnt how to implement different libraries of java and connect all the frames to each other for seamless user experience
- We learned the concept of Disk Scheduling Algorithms thoroughly.
- We learned to implement Desktop App with video, charts, graphs and content.

Enhancement: As an enhancement we suggest that please add a visualization that how the read write head moves through the different tracks and how sectors are rotated while the reading and writing of the data.

Acknowledgment:

Hence, team 53 have implemented all the algorithms successfully within the given time frame and have submitted their video portraying the working of the code properly.

Thanking Chintan sir and Samir Sir for giving us this eminent opportunity to create this GUI and guiding us throughout out project. We are pleased to announce that we have completed our work and will be waiting for your suggestions and constant support in the future.

References:

1. https://www.geeksforgeeks.org/disk-scheduling-algorithms/
2. https://www.jfree.org/jfreechart/ (For graph in GUI)
3. https://netbeans.apache.org/download/nb121/nb121.html