

“SYN Jasper Reports”
-
**“JASPER REPORTING FOR
FINANCE & REGULATORY
CONTROLS”**

**PREPARED BY
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**Department of Compute Science Engineering
Institute of Engineering and Technology (IET)**

JK Lakshmipat University Jaipur

June 2022

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Practice School-2

Submitted in partial fulfilment of the requirements
for the degree of

Bachelor of Technology in Computer Science Engineering

By

Kritika Sharma (2018BTechCSE108)

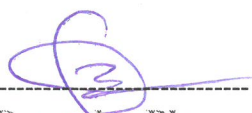
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CERTIFICATE**

This is to certify that the Practice School-2 project work entitled “**SYN Jasper-Jasper Reporting for Finance and Regulatory Controls**” submitted by **Kritika Sharma (2018BTechCSE108)**, towards the partial fulfilment of the requirements for the degree of **Bachelor of Technology in Computer Science Engineering** of JK Lakshmipat University Jaipur is the record of work carried out by them under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for Practice School-II examination.

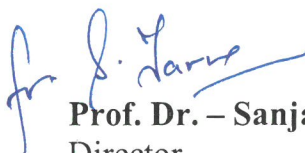


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Kritika

Sincerely yours,
Kritika Sharma (2018BTechCSE108)

ABSTRACT

‘Regulatory reporting’ is the submission of raw or summary data needed by regulators to evaluate a bank’s operations and its overall health, thereby determining the status of compliance with applicable regulatory provisions. It is a crucial activity for financial services organisations. These reports are necessary for communicating financial information together with relevant data and commentary that complies with reporting requirements and accounting standards while addressing stakeholders’ concerns. It Reduce risk demonstrate compliance for new regulations and market practices across all asset classes and securities finance transactions. We will use Jasper soft to generate reports and send reports to users automatically through triggering by ControlM job.

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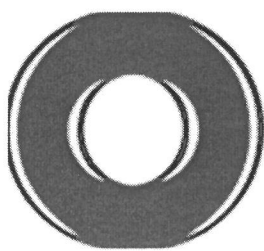
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CHAPTER 1: INTRODUCTION

1.1 About Organization

Macquarie is a global financial services group operating in 33 markets in asset management, retail and business banking, wealth management, leasing and asset financing, market access, commodity trading, renewables development, specialist advisory, capital raising and principal investment.

The diversity of our operations, combined with a strong capital position and robust risk management framework, has contributed to our 53-year record of unbroken profitability. We bring specialist, global expertise in areas such as infrastructure, energy, technology, and commodities. We focus on innovation, careful risk management and delivering sustained long-term value for our clients, partners, investors, staff, and the broader communities in which we operate.



MACQUARIE

Our Businesses

- **Macquarie Asset Management**

Macquarie Asset Management (MAM) provides investment solutions to clients across a range of capabilities in Private Markets and Public Investments, including infrastructure, green investments, agriculture and natural assets, real estate, private credit, asset finance, equities, fixed income and multi-asset solutions

- **Banking and Financial Services**

Banking and Financial Services (BFS) comprises Macquarie's retail banking and financial services businesses, providing a diverse range of personal banking, wealth management, and business banking products and services to retail clients, advisers, brokers, and business clients.

- **Commodities and Global Markets**

Global Business offering capital and financing, risk management, market access, physical execution, and logistic solutions to its diverse client base.

- **Macquarie Capital**

Macquarie Capital combines specialist expertise, innovative advice and flexible capital solutions to help our clients and partners make opportunity reality. Our global corporate advisory, investing, development and equities capabilities focuses on infrastructure and real assets; technology, software and services; and resources, energy and materials.

I am part of SYN Backoffice development (SYNBODEV) team of
Macquarie Capital Business Group (Maccap Equities)

Australia and New Zealand	Asia	Europe, Middle East and Africa
Australia	China	Austria
New Zealand	China (中文)	France
	Hong Kong SAR	Germany
Americas	India	Ireland
Brazil	Indonesia	Italy
Canada	Japan	Netherlands
Canada (Français)	Japan (日本語)	South Africa
United States	Malaysia	Switzerland
	Philippines	United Arab Emirates
	Singapore	United Kingdom
	South Korea	
	South Korea (한국어)	
	Taiwan	
	Taiwan (中文)	
	Thailand	

We are a global financial services group operating in 33
markets

53 years

of unbroken
profitability

18,000+

employees globally

\$A774.8

billion

assets under
management

1.2 Purpose

Jaspersoft is a Java-based open-source BI platform developed by TIBCO. The product has been around for several years and excels in the fields of embedded BI, visualization, and data exploration. The Jaspersoft product consists of five different modules: Report Server, Studio, OLAP, Dashboard Designer and Analysis.

Jasper Reports is an open-source reporting library that can be embedded into any Java application. Features include:

- Scriptlets may accompany the report definition,^[1] which the report definition can invoke at any point to perform additional processing. The scriptlet is built using Java and has many hooks that can be invoked before or after stages of the report generation, such as Report, Page, Column or Group.
- Sub-reports

Finance and Regulatory Control reports are generated for many purposes:

- Monitoring safety and soundness on the individual legal entity level (e.g., regulatory capital)
- Monitoring systemic risk in the banking and financial systems
- improves efficiency and transparency in the market.

1.3 Solution

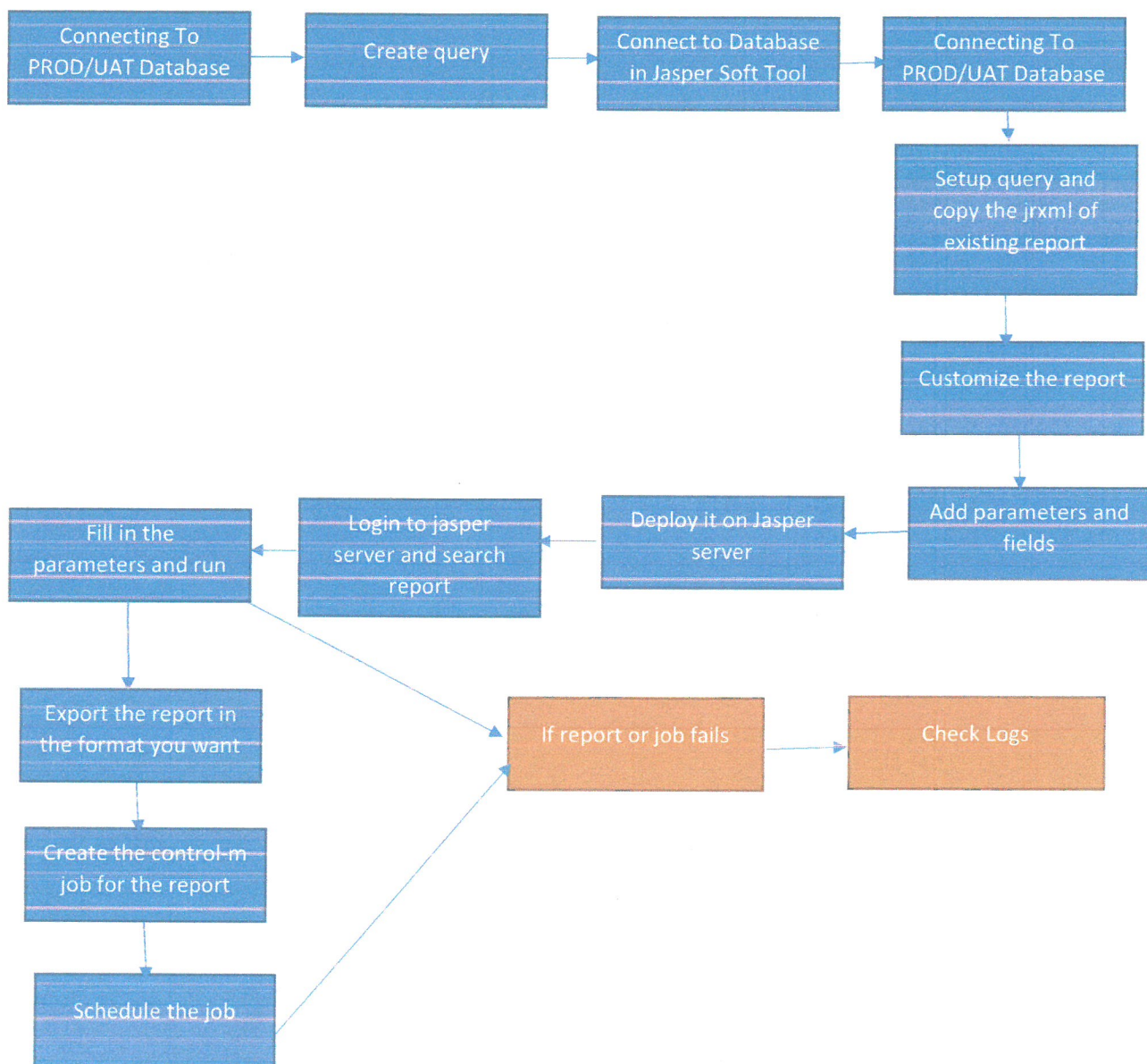
Reports are created according to the need of client, which information they want in their transaction or trade. These reports are generated by jasper and then automated to send to users/clients automatically through triggering jobs which are created in Control M.

Major steps are:

1. Preparing query for data extraction from database.
2. Creating report in Jasper Soft.
3. Deploying reports on UAT server
4. Automation of reports
5. Fixing Production issue of the reports

CHAPTER 2: WORKFLOW

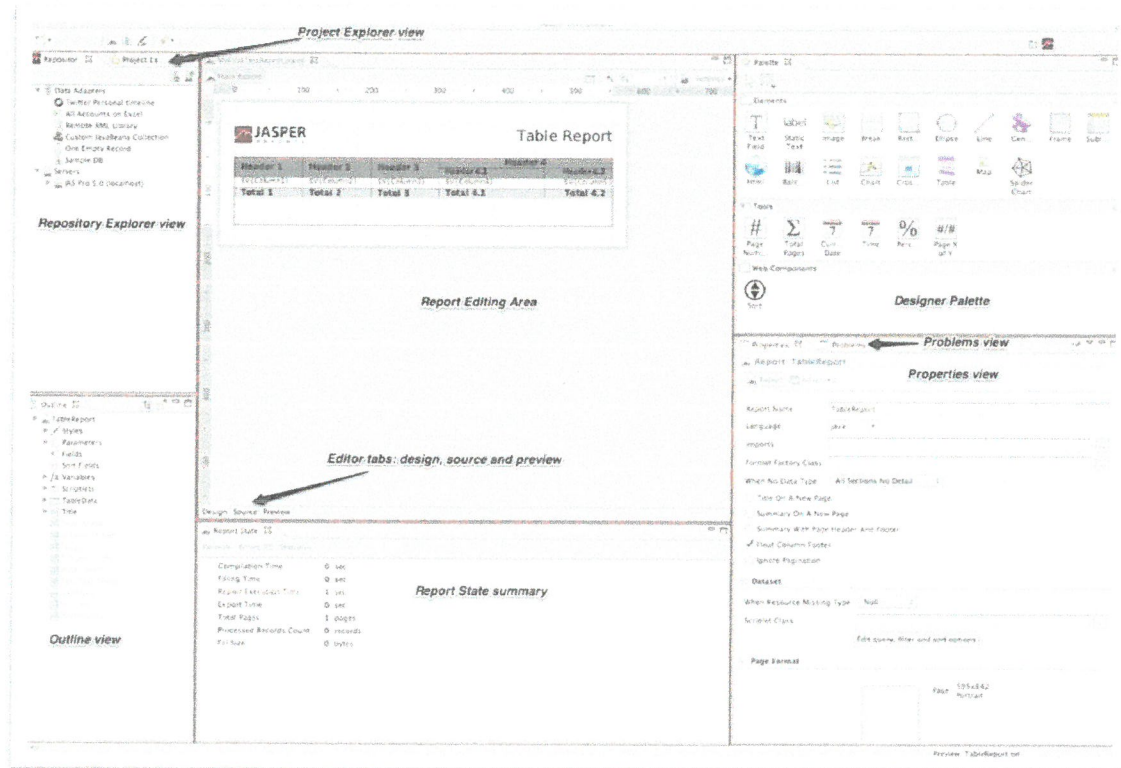
2.1 Flowchart of Japer Reporting



2.2 CREATION OF JASPER REPORTS

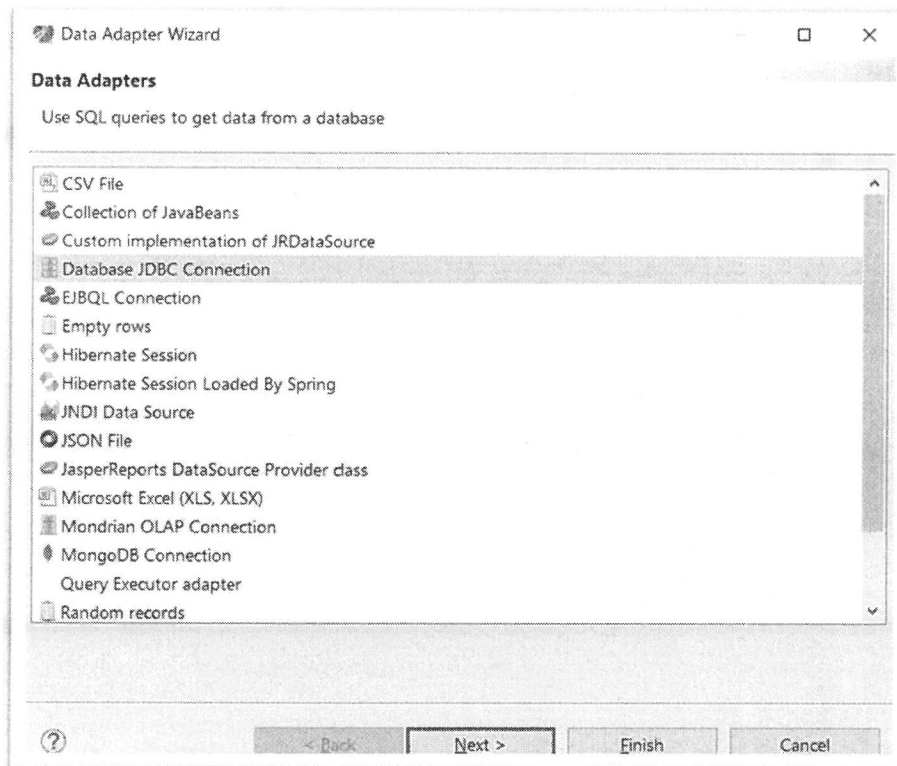


- Open jaspersoft tool and Design the report in iReport Create a new report

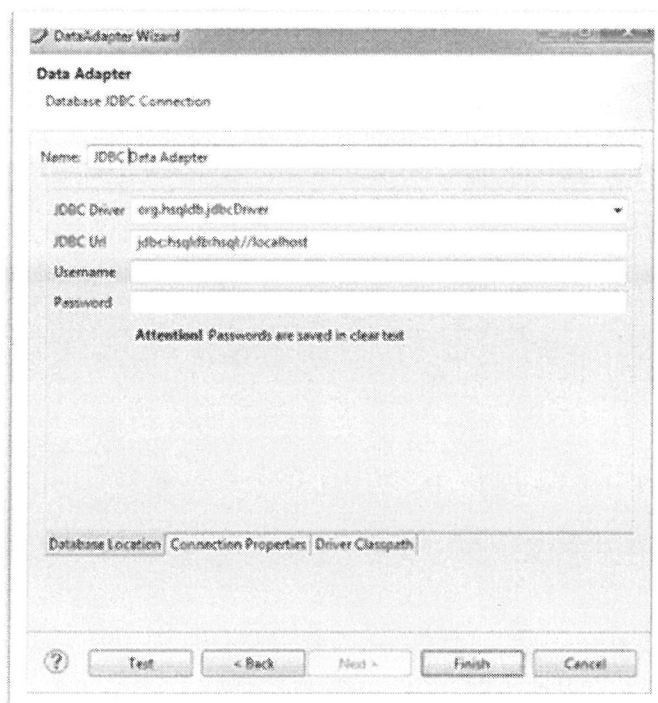


Layout of jasper soft

- Setup the database connection. Database connection can be of UAT or PROD.

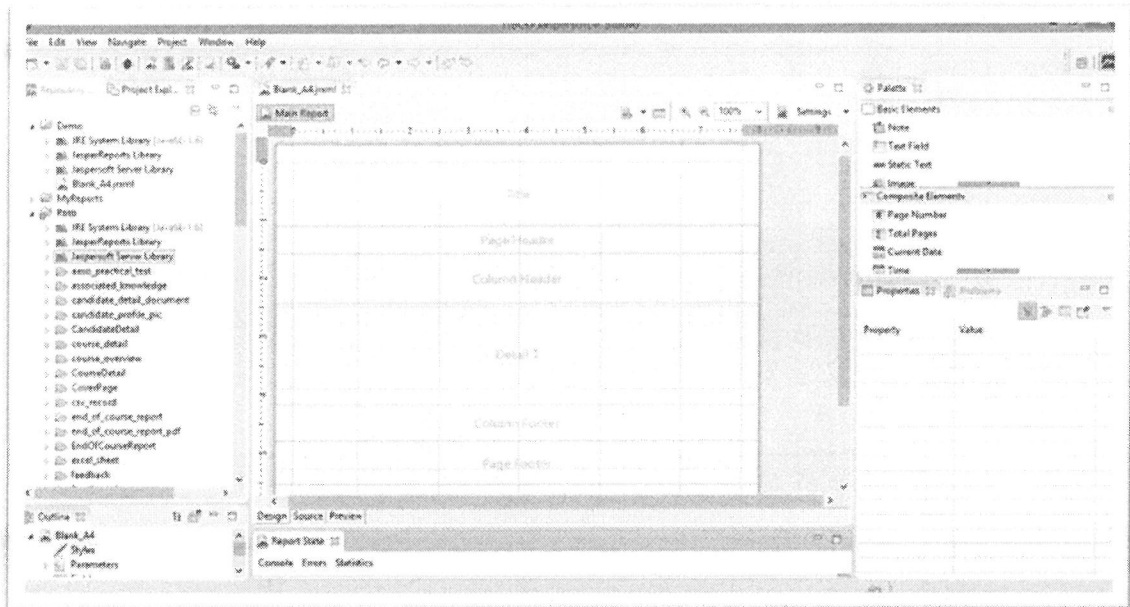


Database connection



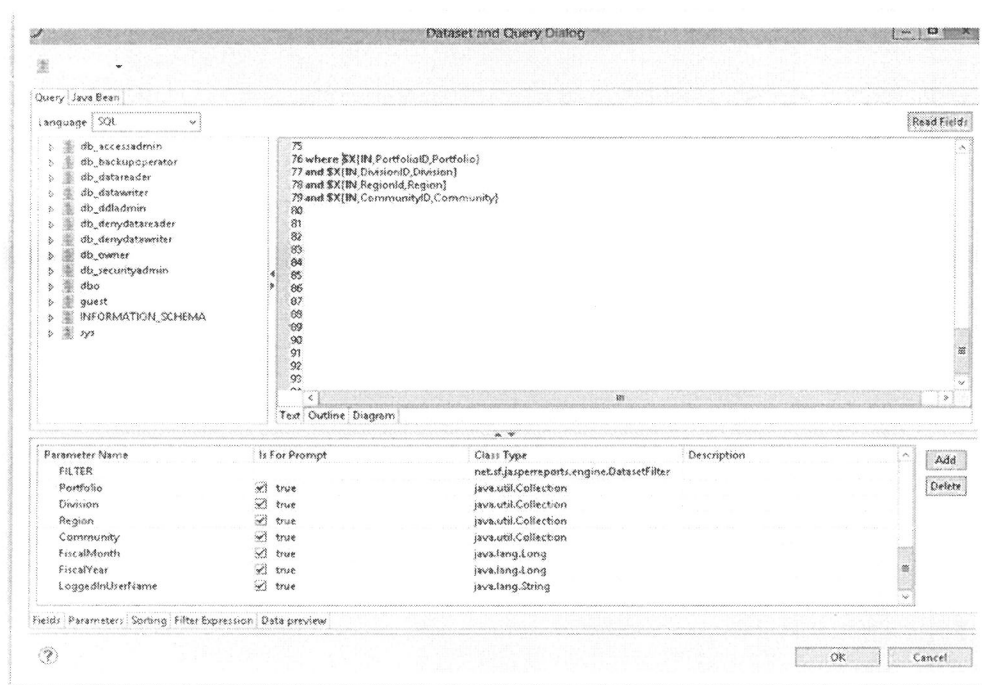
Login page for Database connectivity

- Open the Report Inspector. Usually for one report, we only need Title, Column Header and Detail So you can right click to delete other bands.



Report Template view

- Click query button to display the Report query window which is used to input the SQL query. Type the query in the area.



Connectivity through Query

- In <reportUnit> tag,
update the following
- a) folder
- b) name
- c) label
- d) creationDate
- e) updateDate
- f) mainReport > localResource > dataFile
- g) mainReport > folder
- h) mainReport > name
- i) mainReport > creationDate
- j) mainReport > updateDate



```

<path id="rpt.classpath">
  <pathelement location="ant-build/app" />
  <fileset dir="${dir.lib}/development" includes="*.jar" />
  <fileset dir="${dir.web}/WEB-INF/lib" includes="*.jar" />
</path>

<path id="rpt.run.classpath">
  <path refid="rpt.classpath" />
  <pathelement location="ant-build/app" />
</path>

<taskdef name="rptJasperCompile" classname="net.sf.jasperreports.ant.JRAntCompiler"
  <classpath refid="rpt.classpath" />
</taskdef>

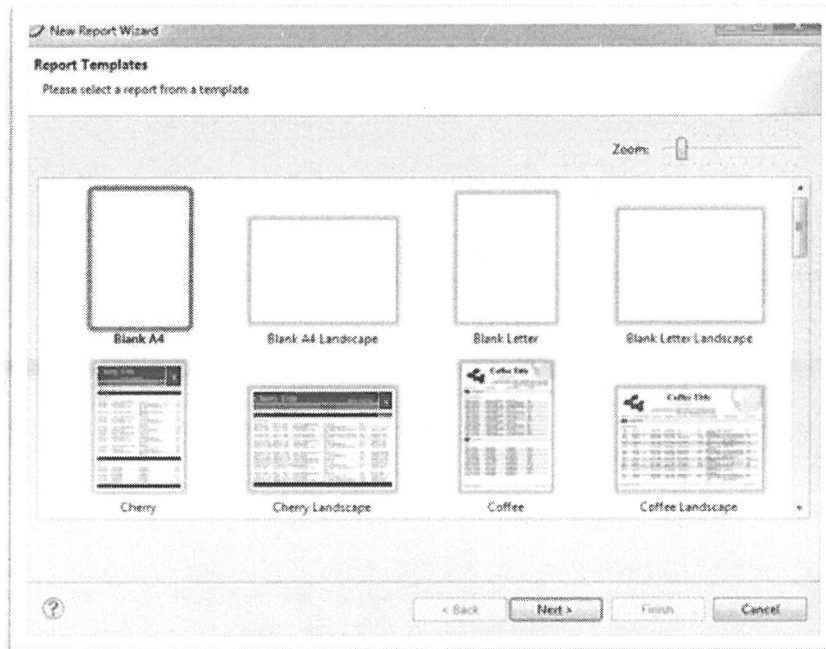
<target name="report-clean">
  <delete dir="web/WEB-INF/jasper">
    <exclude name="**/*.jrxml" />
  </delete>
</target>

<target name="report-compile" depends="report-clean">
  <record name="report-compile.log" loglevel="verbose" append="false"/>
  <rptJasperCompile destdir="web/WEB-INF/jasper" tempdir="web/WEB-INF/ftl/jasper" ke
    <src>
      <fileset dir="web/WEB-INF/ftl/jasper">
        <include name="**/*.jrxml" />
      </fileset>
    </src>
    <classpath refid="rpt.run.classpath" />
  </rptJasperCompile>
</target>

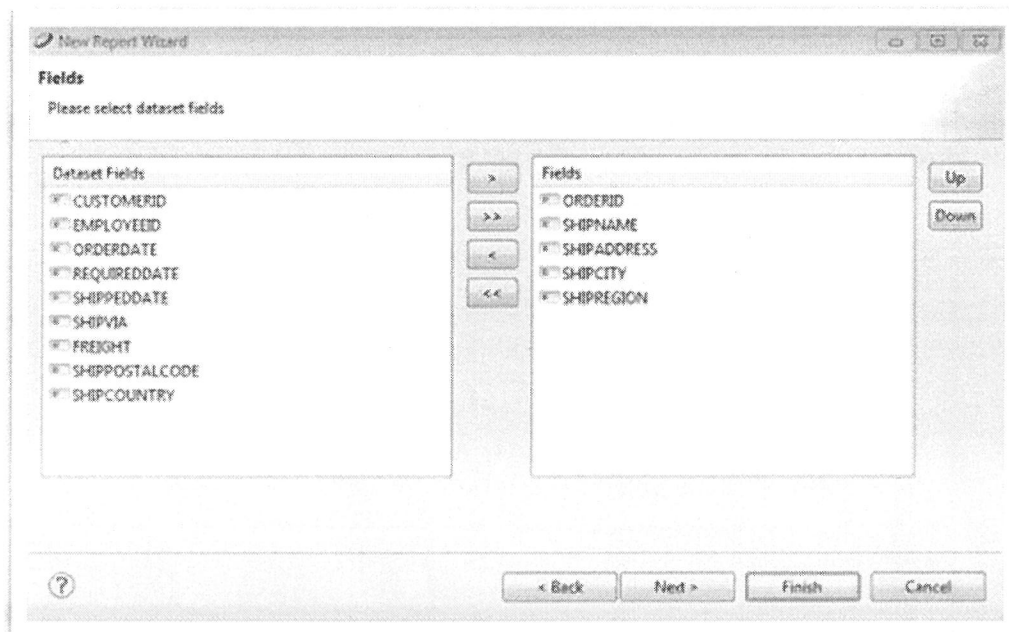
```

Jrxml file of report

- Open Server Repository and setup PROD and UAT repository.
- Go to that folder under Reports which contains all the jasper reports.
- Right click on it to create a new report.

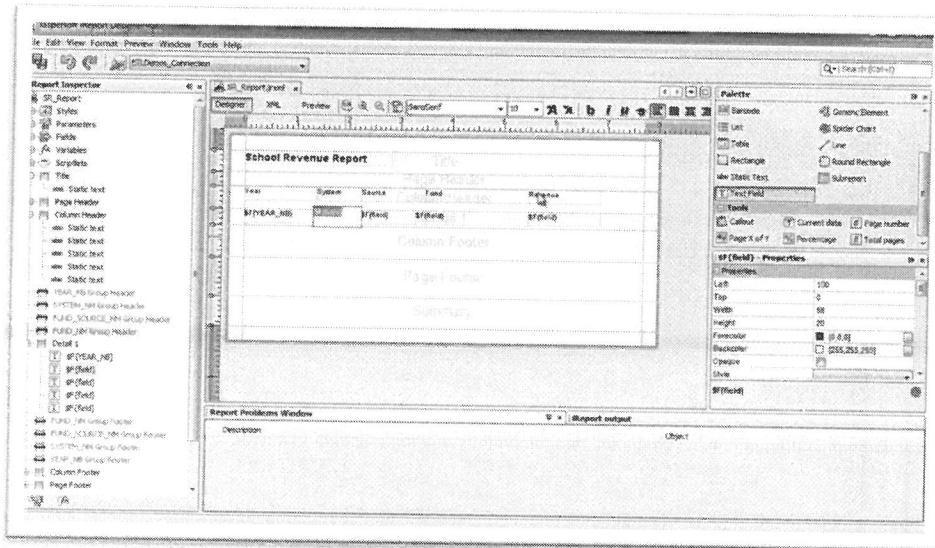


Templates for jasperreports



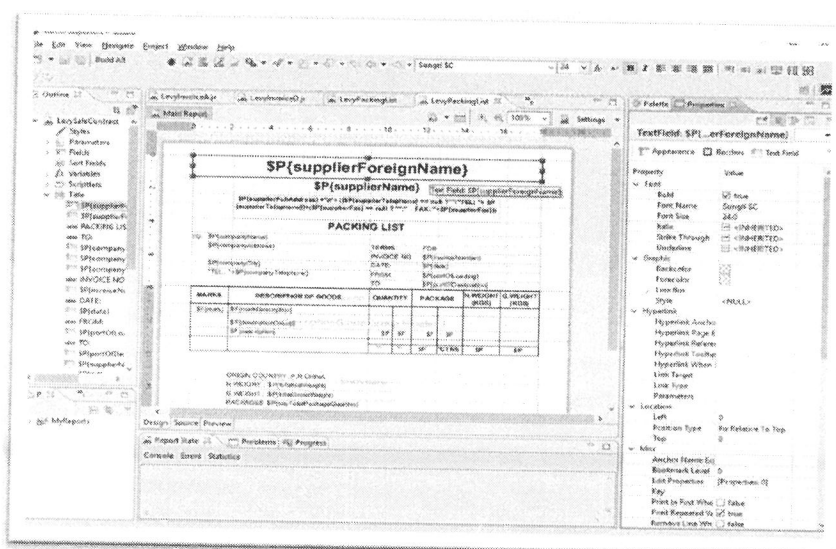
Selecting columns for report

- Right click on the Main.jrxml to replace with current document.
- Add the fields and values in the report according to the need of client and what user want in report related to transaction or trading.



Customizing report

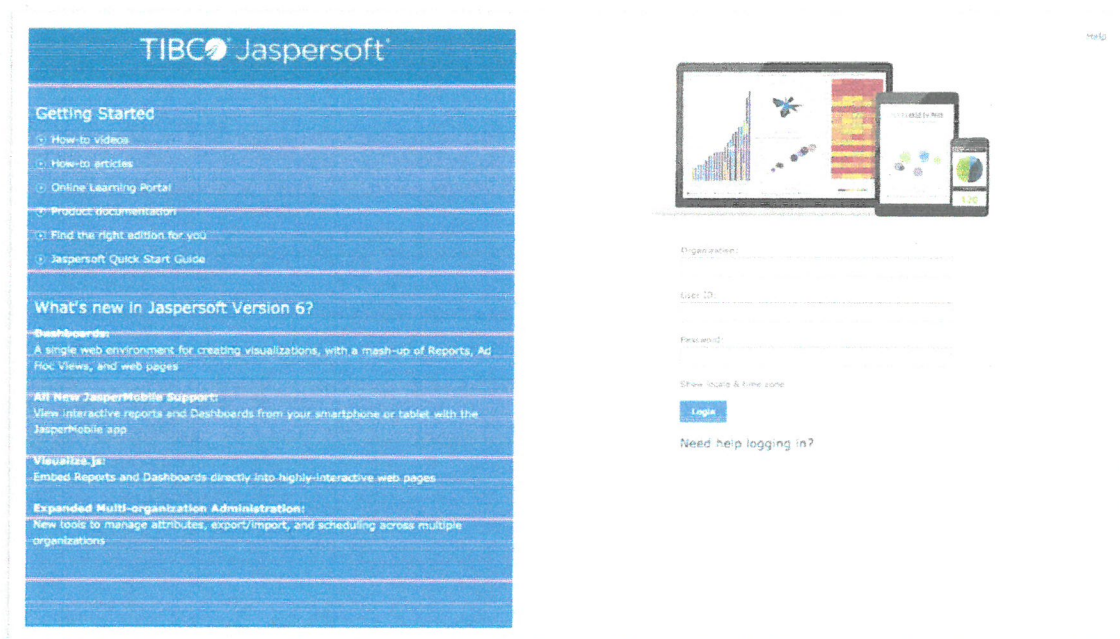
- Add input parameters in the report, let say the user want to have the report for Any trade dates he/she want and any market. Then you can create parameters like DATETRADEFROM, DATETRADETO, MARKET (dropdown)



Report editor preview

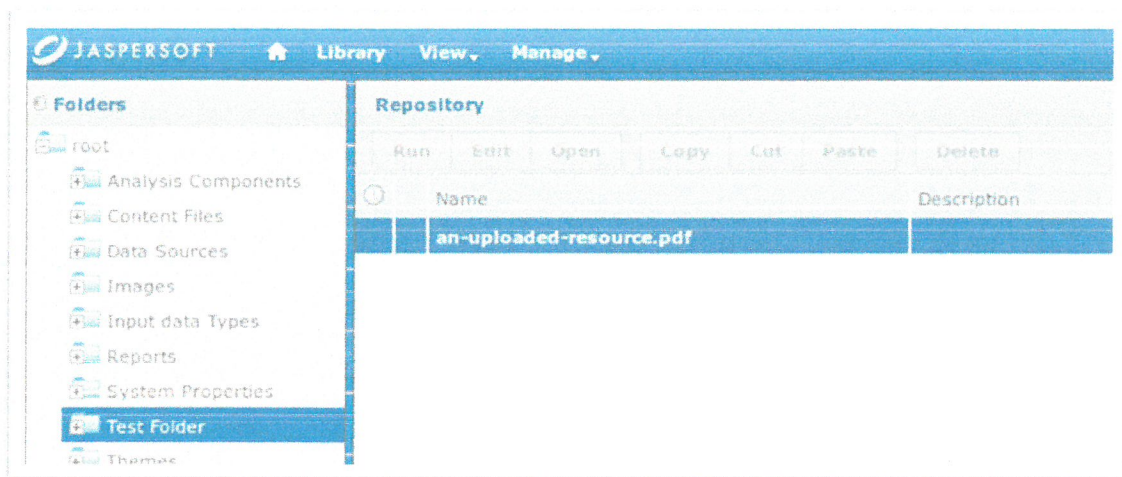
2.3 DEPLOYMENT OF JASPER REPORT ON JASPER SERVER:

- Deploy the report on jasper server by clicking deployment button and select the correct directory in which report get deployed on server.
- Login to Jasper server with the credentials.



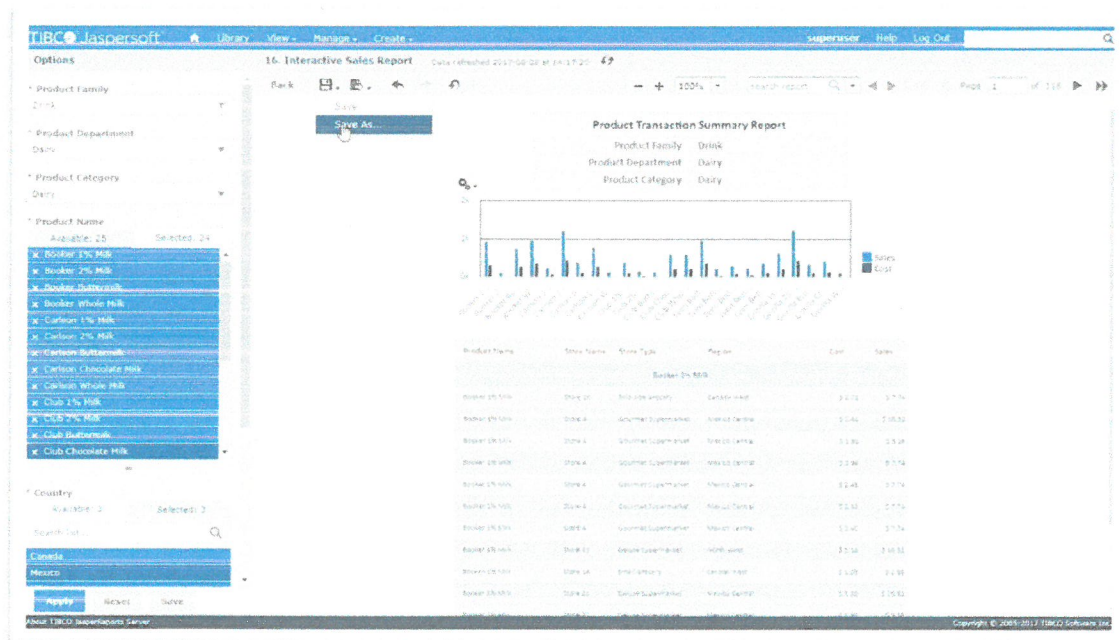
Jasper server login page

- Search for the report you have created



Report directories

- You can fill data in parameters according to your need and can save it in any format you want.



Report preview on server

- If we want to edit any existing report, copy its jrxml to jaspersoft and do changes according to the user's need. Deploy the changes on server again.

2.4 AUTOMATION OF REPORTS



Control-M is a workload automation software that offers the functionalities for building, defining, scheduling, managing, and monitoring production workflows. It will let you embed workflow orchestration in your CI/CD pipeline. It can be integrated with AWS, Azure, and Google Cloud Platform to automate the workflows across hybrid and multi-cloud environments.

- Created control-m jobs in shell script.
- These jobs can be created for individual jasper report or group of reports.
- Just take a case study in which I want my trade transactions of Market X and the investment details of bank Y monthly on 15th day of month and want that report mailed to me and cc to my broker.
- Job will be created in shell script format in which you have to mention the directory of report which user want, the report output format, in which dir. report should be saved, the dir. in which logs of report should be saved.
- We can mention If the report gets automated, whom to mail it, whom to cc it, what should be the subject, what should be the message.

2.5 FIXING PRODUCTION ISSUE OF THE REPORTS

Sometimes report usually fail or take so much time. So, the first step is always to check logs, Logs are maintained whenever the report is executed on server.

- If logs show build error, problem can be in the report building so have to check report once in jasper soft.
- If the log shows time out error, it means report is taking long time to execute so query should be optimized, majorly working on joints and cases.

CHAPTER 3: TECHNOLOGY STACK

- **Jasper Soft**

Jasper soft Studio is a powerful desktop **report designer** for developing data visualizations and full-fledged reports. Featuring the industry's most advanced design environment, it enables you to create highly formatted, pixel-perfect reports and data visualizations. Used to create jasper reports.

- **Jasper report Server**

Jasper Reports Server is a stand-alone and embeddable reporting server, enabling delivery of mission critical information on a real-time or scheduled basis to the web, to the printer, or to a variety of file formats. Build a report in iReport and then deploy it to Jasper Reports Server. The report can then be executed, exported to a desired output, or scheduled to execute later. Used for deployment and execution of jasper reports.

- **Oracle Database**

An Oracle **database** is a collection of data treated as a unit. The purpose of a database is to store and retrieve related information. A database server is the key to solving the problems of information management. Connected to different UAT, PROD databases for query optimization and creating queries.

- **mRemote**

mRemoteNG is a fork of mRemote: an open source, tabbed, multi-protocol, remote connections manager for Windows. mRemoteNG adds bug fixes and new features to mRemote and allows you to view all your remote connections in a simple yet powerful tabbed interface. Used to connect different servers.

- **Winscp**

WinSCP (*Windows Secure Copy*) is a free and open-source SSH File Transfer Protocol (SFTP), File Transfer Protocol (FTP), WebDAV, Amazon S3, and secure copy protocol (SCP) client for Microsoft Windows. Its main function is secure file transfer between a local computer and a remote server.

- **Java and Shell script** for jobs creation

RESULTS

Since we have created Jasper reports and have deployed it, so the reports can be smoothly generated for users and let say user want report mailed to him on T+1 then, after creating jobs, reports can be schedule for T+1 day monthly.

CHAPTER 4 : CONCLUSION

4.1 Impact of Regulatory Activity

Successful financial regulation prevents market failure, promotes macroeconomic stability, protects investors, and mitigates the effects of financial failures on the real economy. Financial regulation can also be used to improve market transparency and to protect investors, although these ends might simply serve to prevent market failure. However, financial regulation also imposes a variety of costs on regulated firms and the economy:

- Direct costs: Costs of regulation administration and enforcement, which might be complicated by having multiple agencies enforce regulation. These costs might be financed by some combination of taxes and fees imposed on regulated institutions and their clients. In fact, these costs might be absorbed by regulated firms through self-regulation.
- Indirect costs: Costs of compliance, such as those associated with maintaining records, hiring compliance officers, making payments to auditors and ratings agencies, and so on.
- Distortions to financial markets: Reactions to regulation often cause institutions to conduct business sub-optimally and can cause firms to leave or restrict their entry into the marketplace. Regulated firms often seek operating jurisdictions with the least restrictive regulations.

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- <https://community.jaspersoft.com/project/jaspersoft-studio>
- <https://www.jaspersoft.com/business-intelligence-solutions>
- <https://www.fiverr.com/eduardoramos/jasperreport-design-and-implementation>
- <https://winscp.net/eng/index.php>
- <https://mremoteng.org/>

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06 June 2022

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To whom it may concern,

CONFIRMATION OF INTERNSHIP

This letter is to certify that Kritika Sharma, employee ID A7950 is working on the internship project work titled "Jasper Reporting" under my supervision. This certificate is issued for obtaining the credits of internship/major project started on 14th Feb 2022. She has completed 4 months of internship successfully.

Please contact HR Service desk on +63 2 7 908 7404 if you have any questions.

Please note that this information is provided on a confidential basis and should not be disclosed to or used by unauthorized recipients.

Yours faithfully

For and on behalf of
Macquarie Global Services Private Limited

Bhawna Ahuja
Vice President

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