

AI-Enabled FinTech B2B Invoice Management Application

HighRadius

A training report

Submitted in partial fulfillment of the requirements for the award of the degree of

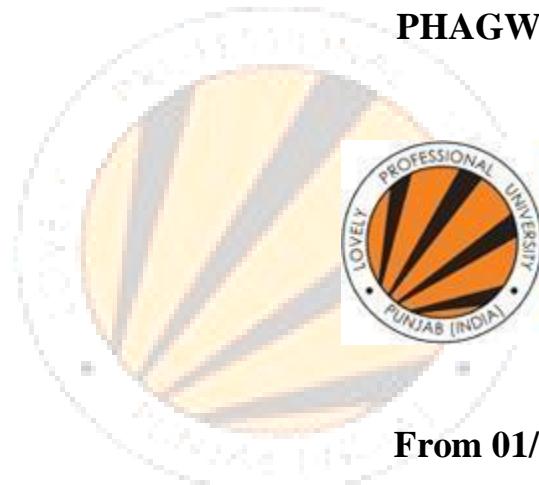
Bachelor of Technology (Computer

Science and Engineering)

Submitted to

LOVELY PROFESSIONAL UNIVERSITY

PHAGWARA, PUNJAB



From 01/27/22 to 4/15/22

SUBMITTED BY

Name of student: Kunal Kumar

Registration Number: 11901883

Signature of the student:

Certificate



CERTIFICATE OF COMPLETION

Product and Engineering

Product Essentials Program

This is to certify that Kunal Kumar has successfully completed the Highway to HighRadius Internship Program from **28th January 2022 to 13th April 2022**, where he/she built and deployed an AI Enabled Fintech B2B Cloud Application.

During this project, he/she was involved in creating a full stack web-based product thereby developing a deep understanding of all aspects of product development such as identifying appropriate user requirements, designing a great user experience and building appropriate data models and machine learning models along with relevant UI components and backend design.

Neha Srivastava

Neha Srivastava
AVP, People & Culture
HighRadius



Annexure-IX (b): Student Declaration

To whom so ever it may concern

I, **Kunal Kumar, 11901883**, hereby declare that the work done by me on “HighRadius Training” from **Jan 2022 to April 2022**, under the supervision of **Deepanshu Yadav and Dasri Pawan, Moderator**, Lovely Professional University, Phagwara, Punjab, is a record of original work for the partial fulfillment of the requirements for the award of the degree, **B.Tech CSE**.

Name of the Student (Registration Number)
Kunal Kumar(11901883)



Signature of the student

Dated:

28/06/2022



INTRODUCTION OF THE COMPANY

HighRadius is a Fintech enterprise Software-as-a-Service (SaaS) company that leverages Artificial Intelligence-based Autonomous Systems to help companies automate Accounts Receivable and Treasury processes. The HighRadius® Integrated Receivables platform reduces cycle times in your order-to-cash process by automating receivables and payments processes across credit, electronic billing and payment processing, cash application, deductions, and collections.

➤ **Company's Vision and Mission**

HighRadius is a leading Software-as-a-Service(SaaS) company in the Accounts Receivables space. The HighRadius Integrated Receivables platform optimizes cash flow through the automation of receivables and payments process across cash application, credit, collections, deductions, electronic billing, and payment processing.

At HighRadius, we firmly believe that a product is only as good as the people behind it. Whether it's product development, customer support, sales, or operations, all our employees see the direct impact of their work. As one of the fastest-growing FinTech software companies and a leader in the Fortune 1000 space, HighRadius focuses on hiring talented and motivated people from diverse backgrounds.

If you want to channel your ambition and drive for success, you belong with the HighRadius! Check out our websites for more information.



Origin and growth of the company

HighRadius is a Fintech enterprise Software-as-a-Service (SaaS) company that leverages Artificial Intelligence-based Autonomous Systems to help companies automate Accounts Receivable and Treasury processes. The HighRadius® Integrated Receivables platform reduces cycle times in your order-to-cash process by automating receivables and payments processes across credit, electronic billing and payment processing, cash application, deductions, and collections.

HighRadius is the fastest growing technology in the world. This is founded in 2006 by SHASHI NARAHARI it is an AI-based solution company.

A leader in Cash automation technology, HighRadius' customers range from some of the largest global corporations including more than 200 Fortune 1000 companies as well as mid-size enterprises. After its latest \$125 million Series B funding, HighRadius reached unicorn status, valued at over \$1 billion.

Now in its 34th year, the Entrepreneur Of The Year program honors entrepreneurial business leaders whose ambitions deliver innovation, growth, and prosperity as they build and sustain successful businesses that transform our world.



Various departments and their functions

In HighRadius there are multiple departments that all have their functionality. Every department is working together in a very good manner and also all The departments are connected and work smoothly.

1. ML Departments: ML department is a very new and growing technology in the world and almost every company is using this technology for making their product more attractive and flexible. There are some responsibilities of ML engineers.

- Designing ML systems.
- Researching and implementing ML algorithms and tools.
- Selecting appropriate data sets.
- Picking appropriate data representation methods.
- Identifying differences in data distribution that affects model performance.
- Verifying data quality.
- Transforming and converting data science prototypes.
- Performing statistical analysis.
- Running machine learning tests.
- Using results to improve models.
- Training and retraining systems when needed.
- Extending machine learning libraries.
- Developing machine learning apps according to client requirements.

2. L & D Department: The learning and development department is a department in which we daily learn some new technology and work with that technology in our product.

- Create and execute learning strategies and programs
- Evaluate individual and organizational development needs

- Implement various learning methods companywide (e.g. coaching, job-shadowing)
- Design and deliver e-learning courses, workshops, and other training
- Assess the success of development plans and help employees make the most of learning opportunities
- Help managers develop their team members through career pathing
- Track budgets and negotiate contracts
- Hire and oversee training and L&D Specialists

3. UI/UX Department: A UI/UX designer's job is to create a user-friendly interface that enables users to understand how to use complex technical products. If you're passionate about the latest technology trends and devices, you'll find great fulfillment in being involved in the design process for the next hot gadget.

- Gather and evaluate user requirements in collaboration with product managers and engineers
- Illustrate design ideas using storyboards, process flows, and sitemaps
- Design graphic user interface elements, like menus, tabs, and widgets
- Build page navigation buttons and search fields
- Develop UI mockups and prototypes that clearly illustrate how sites function and look like
- Create original graphic designs (e.g. images, sketches, and tables)
- Prepare and present rough drafts to internal teams and key stakeholders
- Identify and troubleshoot UX problems (e.g. responsiveness)
- Conduct layout adjustments based on user feedback
- Adhere to style standards on fonts, colors, and images



Organization chart of the company



INTRODUCTION OF THE PROJECT UNDERTAKEN

The Project which was assigned by the HighRadius was nice

and an interesting one. The project was based on B2B in

which there are three-part first one was the ML part second was

a backend and the third one was related to UI. In this project, users can

insert, delete, search the date and according to that dates he can

predict the date on which the user will pay the amount and he can send

the reminder to the customer.

Objectives of the work undertaken

The B2B world operates differently from B2C or C2C world. Businesses work With businesses on credit. When a buyer business orders goods from the seller business, the seller business issues an invoice for the same. This invoice for the goods contains various information like details of the goods purchased and when they should be paid. This is known in accounting terminology as “Accounts Receivable”.

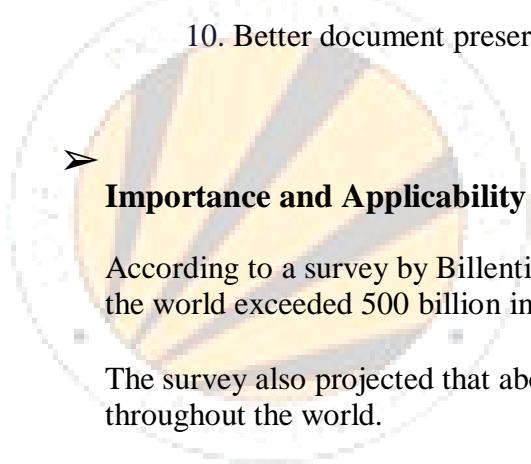
Seller business interacts with various businesses and sells goods to all of them at various times. Hence, the seller business needs to keep track of all invoices from all the buyers. Each invoice will have various important fields like a payment due date, invoice date, amount, baseline date, etc.



Scope of the Work

Automating the invoice management process leads to the following benefits:

1. Consistent rapid processing of invoices
2. Prevention of errors and loss of data
3. Elimination of delays in payments and associated complications such as vendor relationship jeopardy, work pause, etc.
4. Rerouting of manpower on more rewarding tasks
5. Maintenance of the supply chain movement
6. Prevention of fraud
7. Cost savings
8. Greater visibility, control, and compliance
9. Eco-friendliness and avoidance of paper clutter
10. Better document preservation



Importance and Applicability

According to a survey by Billentis, the total number of invoices exchanged around the world exceeded 500 billion in 2019.

The survey also projected that about 70 invoices are exchanged per person per year throughout the world.

The organic annual growth of about 3% and the increasing use of authentication of customer data during the purchase processes are expected to quadruple the invoice volume by 2035.

The management of invoices includes:

- receiving the invoice from a vendor for supplies/services ordered
- validating the legitimacy of the invoice
- processing the payment at the appropriate time
- and recording the payment in company records.

Invoice management usually comes under the purview of the Accounts Payable Department and is part of the purchase-to-pay cycle. Invoice management is important for several reasons:

- Invoices are the basis for timely payment. Invoice management is important to prevent delays and errors in receiving or paying for goods and services.
- Invoice management keeps track of sales/supplies and prevents wastage and delays.
- Invoice management can help in regulating inventory.
- The data from invoice management can help in planning and reviewing financial and performance data of the company
- Eases tax documentation, audits, and taxation activities.



Role and profile

- **Receiving purchase orders and supplier invoices:** Invoices are usually received in various formats – as email attachments, as forms filled online, or as paper copies. The automatic detection of electronically sent invoices and extracting them from the sources (emails/forms etc.) is the first step in invoice management. Automation can ease this task. In the case of a paper-based invoice, some human intervention is required to scan the invoice using OCR software.
- **Extracting relevant data from the invoices and entering them into ERP systems:** Since each invoice holds key data that are used in accounting resource planning, and decision-making within the business, accuracy in data extraction is essential. The data thus read from invoices are usually then transferred to ERP, accounting, or data analytics platforms used by the company for subsequent processing.
- **Performing a three-way match between the invoice, PO, and the receipt:** Automated three-way validation automatically compares and matches records and makes decisions such as passing the transaction, flagging errors, or raising exceptions.
- **Making digital payments:** Automation enables the choice of the best payment terms and timings to pay vendors. The transparency offered in terms of the payment terms and corporate liabilities, allows adjustments in the payment plan to benefit from early payment discounts, delaying payment until the last date, etc.

Brief description of the work done

Position of Internship and roles

In this company my role is an intern and during this internship duration which is of approx. 4+ month I learnt many new technology and simultaneously work over it in a project which solves a real-life problem faced in the Business sector. Whole project is developed under the guidance of the moderator assigned by the HRC (HighRadius Corporation).



Activities/ equipment handled

During the internship, have developed a project for which we have used many tools/equipment like for the Backend part we used JAVA(Servlet and JSP) and for that we used ECLISE IDE, for the Database we used MYSQL and we use SQLYOG database management system, for the front-end part we used HTML,CSS and JavaScript and for that we have used the VSCode IDE and for the ML we used python and Jupyter notebook.



Challenges faced and how those were tackled

In this internship, I had challenges in ReactJs which was new for me but I handled it by exploring the resources present on internet and some of the tutorial videos present on YouTube .

Another challenge was ML because I am working over it for the very first time so I have again explored the internet for the same and also explored all the resources shared by the company during the internship.



Learning outcomes data analysis

In this project, we have learned a lot of things first we use python and how to install a python compiler how the functionality works in python we spend one week on python then after we just go for java and how to interact with java for the backend we use java servlet how to manage it all these we learn about web development where we learn first basic HTML, CSS, Javascript, ReactJS then we use material UI and make the UI for the frontend part.



The objective of Tech Track (Java and React-Js)

Business Overview

Introduction to B2B Operations:

The B2B world operates differently from the B2C or C2C world. Businesses work with other businesses on **credit**. When a **buyer business** orders goods from the **seller business**, the **seller business issues an invoice for the same**. This invoice for the goods contains various information like the details of the goods purchased and when it should be paid. This is known in accounting terminology as “Accounts Receivable”.

“Accounts Receivable represents money owed by entities to the firm on the sale of products or services on credit. In most business entities, accounts receivable is typically executed by generating an invoice and either mailing or electronically delivering it to the customer, who, in turn, must pay it within an established timeframe, called credit terms or payment terms.”

Seller business interacts with various businesses and sells goods to all of them at various times. Hence, the seller business needs to keep track of the total amount it owes from all the buyers. This involves keeping track of all invoices from all the buyers. Each invoice will have various important fields like a payment due date, invoice date, invoice amount, baseline date etc.

The buyer business needs to clear its amount due before the due date. However, in real-world scenarios, the invoices are not always cleared ie. paid in full amount by the due date. The date on which a customer clears the payment for an invoice is called the **payment date**.

Account receivables Department:

1. In the ideal world, the buyer business should pay back within the stipulated time (ie the **Payment Term**). However, in the real world, the buyer business seldom pays within their established time frame, and this is where the Account Receivables Department comes into the picture.
2. Every business consists of a dedicated Account receivables Department to collect and track payment of invoices.
3. It consists of an Account receivables team that is responsible for:
 - Collecting payments from customers for their past due to invoices.
 - Sending reminders and follow-ups to the customers for payments to be made.
 - Looking after the entire process of getting the cash inflow.
 - Help the company get paid for the services and products supplied.

Problem Statement for ML:

As a winter internship project, you will be building a web application to help the people working in the Accounts Receivable departments in their day-to-day activities. You need to build a web application where the users in the Account Receivable department can :

- View the invoice data from various buyers.
- See various fields/attributes of the invoice(s) from a particular buyer.
- Perform Data Pre-processing on the invoice data.
- Get account-level analytics to easily visualize and interpret data- EDA and Feature Engineering.
- Get a prediction of when the invoice is going to get paid.

Problem Statement for Web Application Development:

The objective of the Web Application Development internship project is:

- To build a **Full-stack Invoice Management Application** using ReactJs, JDBC, Java, Servlets.
- Build a **responsive Receivables Dashboard**.
- **Visualize Data** in the form of grids.
- **Visualize Data** in the form of graphs.
- Perform **Searching** operations on the invoices.
- **Add & Edit data** in the editable fields of the grid.
- **Delete data** of selected rows in predefined templates.

React Web App

The mandatory features are compulsory tasks and the optional features are for extra credit points, which will give you an added advantage.

Mandatory Features	Optional Features
<ol style="list-style-type: none">1. UI Creation2. Grid Creation3. Grid Data Loading4. Crud Operation<ol style="list-style-type: none">a) Addb) Editc) Delete5. Pagination6. Advanced Search7. Grid Reloading Button	<ol style="list-style-type: none">1. Predict Button activation with Grid Data2. Shortcut search button on Grid for Customer Id3. Sorting columns4. View - Analytics

HIGH-LEVEL REQUIREMENTS OF APPLICATION

Specifically, below are the major aspects of the application that needs to be developed. The details for each of the below are provided in the functional overview section.

1) Data Loading in DB:

- You will be provided with an **invoices dataset** which you need to parse, process, and load in the provided database schemas.

2) UI Representation of the data:

- Build a responsive UI that can display the invoice data loaded from the database.
- The UI should support searching and pagination
- The UI should support editing of some editable fields, adding a new row to the grid, deleting rows from the grid and advance search.

3) AI Support in the application:

- Add support for predicting the payment date for one or more invoice(s).
- UI should have a button to trigger the prediction of the payment date.
- The payment date needs to be persisted across sessions in the UI.

FUNCTIONAL OVERVIEW

(1) Data Loading in the Database

Below is the sample CSV file screenshot.

1	A	B	C	D	E	F	G	H	I	J	K	L
Sl.	business_code	business_name	cust_number	name_customer	clear_date	buisness_year	doc_id	posting_date	document_create_date	document_create_date.1	due_in_date	
2	1U001	Johnson and Johnst	200769623	PIO associates	2020-02-11	2020	1930438491	2020-01-26	2020-01-25	2020-01-26	2020-02-10	
3	2U001	Johnson and Johnst	200980828	SYS systems	2019-08-08	2019	1929646410	2019-07-22	2019-07-22	2019-07-22	2019-08-11	
4	3U001	Johnson and Johnst	200792734	SUPERB us	2019-12-30	2019	1929873765	2019-09-14	2019-09-14	2019-09-14	2019-09-29	
5	4CA02	Unilever	140105686	SING co		2020	2960623488	2020-03-30	2020-03-30	2020-03-30	2020-04-10	
6	5U001	Johnson and Johnst	200769623	PIO associates	2019-11-25	2019	1930147974	2019-11-13	2019-11-13	2019-11-13	2019-11-28	
7	6CA02	Unilever	140105181	ITWA in	2019-12-04	2019	2960581231	2019-09-20	2019-09-20	2019-09-20	2019-10-04	
8	7U001	Johnson and Johnst	200769623	PIO associates	2019-11-12	2019	1930083373	2019-11-01	2019-10-31	2019-11-01	2019-11-16	
9	8U001	Johnson and Johnst	200744019	KAGO associates		2020	1930659387	2020-03-19	2020-03-18	2020-03-19	2020-04-03	
10	9U001	Johnson and Johnst	200769623	PIO associates	2019-06-18	2019	19294439637	2019-06-07	2019-06-05	2019-06-07	2019-06-22	
11	10U001	Johnson and Johnst	200762301	GODL corp	2019-03-06	2019	1928819386	2019-02-20	2019-02-19	2019-02-20	2019-03-07	
12	11U001	Johnson and Johnst	200418007	COAS trust		2020	1930610806	2020-03-11	2020-03-06	2020-03-11	2020-03-26	
13	12U001	Johnson and Johnst	200743129	AM corporation	2019-01-22	2019	1928550622	2019-01-02	2019-01-02	2019-01-02	2019-01-17	
14	13U001	Johnson and Johnst	200186937	AMERIC trust	2019-05-06	2019	1929151655	2019-04-15	2019-04-15	2019-04-15	2019-04-30	
15	14U001	Johnson and Johnst	200721222	DOLLA associates	2019-11-01	2019	1930022117	2019-10-17	2019-10-17	2019-10-17	2019-11-01	
16	15U001	Johnson and Johnst	200739534	FINDLAY co		2020	1930788296	2020-04-15	2020-04-15	2020-04-15	2020-04-30	
17	16U001	Johnson and Johnst	200353024	WEGMAN foundation		2020	1930817482	2020-04-23	2020-04-23	2020-04-23	2020-04-26	
18	17U001	Johnson and Johnst	200794332	GLA trust	2019-11-12	2019	1930052739	2019-10-25	2019-10-25	2019-10-25	2019-11-09	
19	18U001	Johnson and Johnst	200881076	PLAZA co	2019-12-17	2019	1930209407	2019-12-02	2019-12-02	2019-12-02	2019-12-17	
20	19U001	Johnson and Johnst	200769623	PIO associates	2019-11-26	2019	1930153511	2019-11-15	2019-11-14	2019-11-15	2019-11-30	
21	20U001	Johnson and Johnst	200769623	PIO associates	2020-02-05	2020	1930438462	2020-01-24	2020-01-24	2020-01-24	2020-02-08	
22	21U013	Puma	100053584	SYSCO trust	2020-02-11	2020	1991837817	2020-01-11	2020-01-07	2020-01-11	2020-02-10	
23	22U001	Johnson and Johnst	200783734	LOUD associates	2019-09-04	2019	1929773400	2019-08-21	2019-08-22	2019-08-21	2019-09-05	
24	23U001	Johnson and Johnst	200744019	KAGO associates		2020	1930676042	2020-03-21	2020-03-20	2020-03-21	2020-04-05	
25	24U001	Johnson and Johnst	100006311	AMAZO trust	2019-07-30	2019	1929626925	2019-07-17	2019-07-17	2019-07-17	2019-08-01	
26	25U001	Johnson and Johnst	200769623	PIO associates	2020-02-04	2020	1930431304	2020-01-24	2020-01-23	2020-01-24	2020-02-08	
27	26CA02	Unilever	140106408	MILLENNIU Ifc		2020	2960618790	2020-03-06	2020-03-06	2020-03-06	2020-03-16	

- All the Columns of the CSV file need to be loaded into the DB.

List of all the fields part of dataset are as follows:

- sl_no
- business_code
- business_name
- cust_number
- name_customer
- clear_date
- buisness_year
- doc_id
- posting_date
- document_create_date
- document_create_date.1
- due_in_date
- invoice_currency
- document type
- posting_id
- area_business
- total_open_amount
- baseline_create_date
- cust_payment_terms
- invoice_id
- isOpen
- predicted

(2) UI Representation of the Data:

The UI consists of a single screen :

The screenshot shows a dashboard titled "ABC Products" with a sub-header "highradius". Below the header is a navigation bar with tabs: "PREDICT" (highlighted in blue), "ANALYTICS VIEW", "ADVANCE SEARCH", and a search bar labeled "Search Customer Id". To the right of the search bar are buttons for "ADD", "EDIT", and "DELETE". The main area displays a grid of invoice data with the following columns: Sl no, Business Code, Customer Number, Clear Date, Business Year, Document Id, Posting Date, Document Create Date, Due Date, Invoice Currency, Document Type, Posting Id, Total Open amount, and Baseline Create Date. There are 5 rows of data visible. At the bottom of the grid, there are pagination controls: "Rows per page: 5", "1–5 of 200", and navigation arrows.

<input type="checkbox"/>	Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date
<input type="checkbox"/>	1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26
<input type="checkbox"/>	2	U001	200880828	2019-08-08	2019-01-01	1829646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22
<input type="checkbox"/>	3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86	2019-09-14
<input type="checkbox"/>	4	CA02	140105686	0000-00-00	2020-01-01	2860623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31
<input type="checkbox"/>	5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13

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Receivables Dashboard Page

It consists of 2 sections:

Header:

- a. First Section is the header which comprises the **ABC Product logo on the left, the Highradius Logo in the middle**
- b. The second section consists of **Predict, Advance Search, Analytics View Add, Delete & Edit, and Search bar.**

Add button:

- It is used for adding new **field** values to the grid.
- The Add button will be in the enabled **state** if no row is selected.
- Whenever one or more rows are selected, the Add button will still remain activated.
- After clicking on the Add button, a pop-up window will appear with all the fields for which values need to be added along with a Cancel and an Add button.
- The user should be able to **type in the values**, except for the date of the invoice for which there should be a calendar view from where the user is able to select the required date, month, and year.
- The user should fill in all the required fields before adding. If the user tries to click on add before all mandatory fields are filled, the user will not be able to add.

Add

Business Code	Customer Number	Clear Date 01/25/2022	Business Year
Document id	Posting Date 01/26/2022	Document Create Date 01/25/2022	Due Date 01/25/2022
Invoice Currency	Document type	Posting Id	Totam open amount
Baseline Create Date 01/26/2022	Customer Payment Terms	Invoice Id	
ADD		CANCEL	

Full-Screen View

ABC Products

highradius

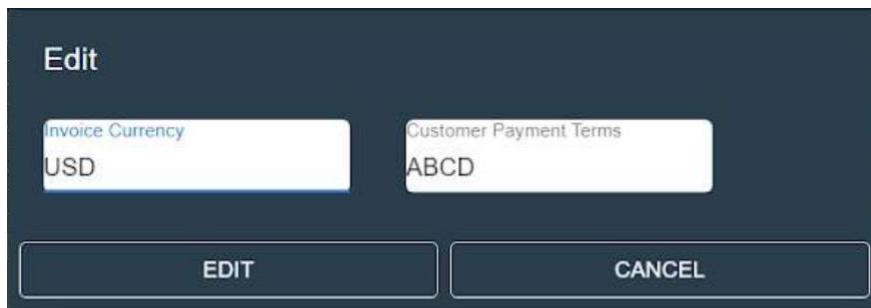
Business Code	Customer Number	Clear Date 01/25/2022	Business Year
Document id	Posting Date 01/26/2022	Document Create Date 01/25/2022	Due Date 01/25/2022
Invoice Currency	Document type	Posting Id	Totam open amount
Baseline Create Date 01/26/2022	Customer Payment Terms	Invoice Id	
ADD		CANCEL	

Edit button:

- It is used for editing the **editable field** values in the grid.
- Edit button should be disabled at first and should enable only one checkbox is selected
- A user should be able to select a row and then click on the Edit button.
- The fields which can be edited are the **Invoice Currency and Customer Payment Terms** fields.

Without selecting any row, the Edit button should remain disabled.

- On clicking the Edit button, a popup should open up with the column header name and existing value. The user should be able to edit the existing value.
- The popup should have a **Edit**, **Cancel** as shown in the UI below.



Full-Screen View

The image shows a full-screen application interface. At the top, there are navigation tabs: "PREDICT", "ANALYTICS VIEW", "ADVANCE SEARCH", and a search bar labeled "Search Customer Id". Below these are several buttons: "ADD", "EDIT", and "DELETE". The main area is a data grid with the following columns: Sl no, Business Code, Customer Number, Clear Date, Business Year, Document Id, Posting Date, Document Create Date, Due Date, Invoice Currency, Document Type, Posting Id, Total Open amount, and Baseline Create Date. A modal window titled "Edit" is overlaid on the grid, containing two input fields: "Invoice Currency" (value: USD) and "Customer Payment Terms" (value: ABCD). At the bottom of the modal are "EDIT" and "CANCEL" buttons. At the bottom of the screen, there is a footer with links to "Privacy Policy" and "© 2022 HighRadius Corporation. All rights reserved." and a note about rows per page (5, 1-5 of 200).

Delete Button :

- Clicking on the **delete button** will allow the user to **delete records** from the grid.
- When the **user selects one or more rows**, the delete button gets enabled.
- A pop-up should be displayed on clicking delete to confirm that the user wants to delete the selected records permanently.
- Once the user clicks on the delete button, the row(s) should be removed from the grid in the UI and should remain persistent.



Refresh Grid Button:

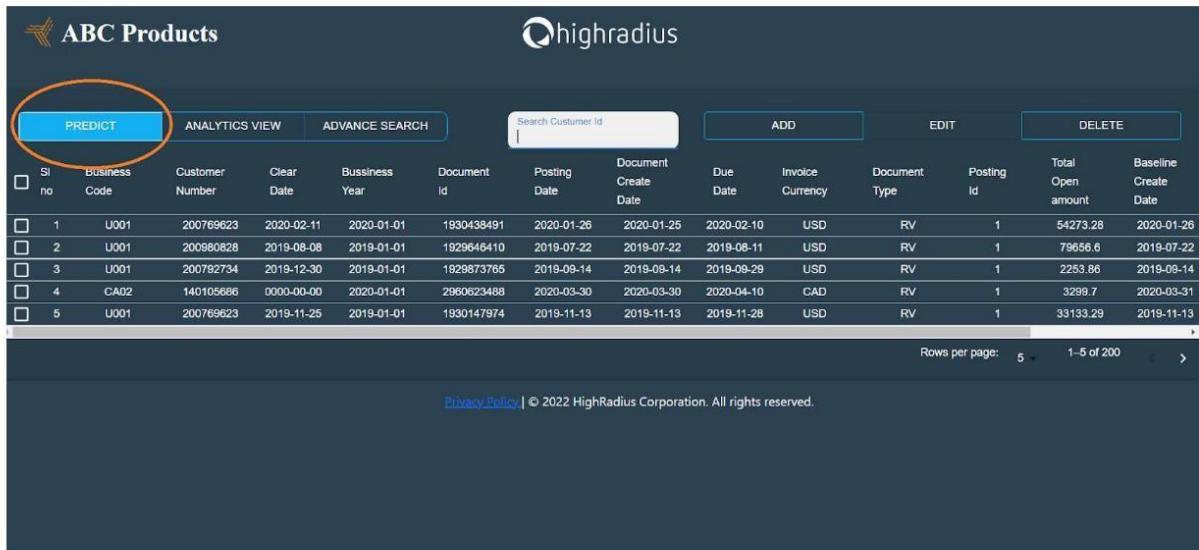
This is used to refresh the grid data

Full-Screen View

Predict button:

- Users should be able to predict the payment date of selected Invoices with the help of the Predict button.

- Clicking on this button will populate the Predicted Payment Date column on the UI with the predicted dates.
- When the user selects one or more Invoices and clicks on the Predict button, the Predicted Payment Date column should get populated only for those invoices.
- The button should get activated only upon selecting any of the Invoice(s).
- If no Invoice is selected, the button should be in a disabled state.



<input type="checkbox"/> Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date
<input type="checkbox"/> 1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26
<input type="checkbox"/> 2	U001	200880828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22
<input type="checkbox"/> 3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86	2019-09-14
<input type="checkbox"/> 4	CA02	140105686	0000-00-00	2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31
<input type="checkbox"/> 5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13

Rows per page: 5 | 1-5 of 200

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Advanced Search button:

The UI consists of the **Advanced Search** button.

Clicking on this button will help the user to perform an advanced search on the data based on the following four fields:

1. Document Id-(doc_id)
2. Customer No-(cust_number)
3. Invoice No-(invoice_id)
4. Business Year- (buisness_year)

Advance Search

The screenshot shows a dashboard for 'ABC Products' with the HighRadius logo at the top right. The main area has tabs for 'PREDICT', 'ANALYTICS VIEW', and 'ADVANCE SEARCH'. The 'ANALYTICS VIEW' tab is active, displaying a table of transaction data with columns: Sl no, Business Code, Customer Number, Clear Date, Bus Year, Document Type, Posting Id, Total Open amount, and Baseline Create Date. Below the table is a modal window titled 'Advance Search' containing four input fields: 'Document ID', 'Invoice Id', 'Customer Number', and 'Business Year', with 'SEARCH' and 'CANCEL' buttons.

Sl no	Business Code	Customer Number	Clear Date	Bus Year	Document Type	Posting Id	Total Open amount	Baseline Create Date
1	U001	200769623	2020-02-11	2020	RV	1	54273.28	2020-01-26
2	U001	200880828	2019-08-08	2019	RV	1	79656.6	2019-07-22
3	U001	200792734	2019-12-30	2019	RV	1	2253.86	2019-09-14
4	CA02	140105686	0000-00-00	2020	RV	1	3299.7	2020-03-31
5	U001	200769623	2019-11-25	2019	RV	1	33133.29	2019-11-13
6	CA02	140106181	2019-12-04	2019	RV	1	22225.84	2019-09-24
7	U001	200769623	2019-11-12	2019	RV	1	7358.49	2019-11-01
8	U001	200744019	0000-00-00	2020	RV	1	11173.02	2020-03-19
9	U001	200769623	2019-06-18	2019	RV	1	15995.04	2019-06-07
10	U001	200762301	2018-03-06	2018	RV	1	28.63	2019-02-20

Rows per page: 10 | 1–10 of 200 >

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Analytics View: (Optional Task)

To get insights from the existing data based on users inputs. The existing parameters would act as key points or outliers for the synthesis of data.

So the analytics view will be a button in UI which responds to a new window on click event

PREDICT **ANALYTICS VIEW** **ADVANCE SEARCH**

Search Customer Id:

Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date	
<input type="checkbox"/>	1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26
<input type="checkbox"/>	2	U001	200980828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22
<input type="checkbox"/>	3	U001	200792734	2019-12-30	2019-01-01	1828873765	2019-08-14	2019-08-14	2019-09-29	USD	RV	1	2253.86	2019-08-14
<input type="checkbox"/>	4	CA02	140105686	0000-00-00	2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31
<input type="checkbox"/>	5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13

Rows per page: 5 | 1-5 of 200 < >

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Clear Date

Analytics View

Clear Date	Due Date
<input type="text"/> dd-mm-yyyy	<input type="text"/> dd-mm-yyyy
<input type="text"/> dd-mm-yyyy	<input type="text"/> dd-mm-yyyy
Baseline Create Date	Invoice Currency
<input type="text"/> dd-mm-yyyy	<input type="text"/> Invoice Currency
<input type="text"/> dd-mm-yyyy	
SUBMIT	
CANCEL	

Full-Screen View:

The screenshot shows a web application interface. At the top left is the logo 'ABC Products'. At the top right is the logo 'highradius'. Below the logos, the title 'Invoice List' is displayed. A horizontal menu bar contains three items: 'PREDICT' (highlighted in blue), 'ANALYTICS VIEW', and 'ADVAN'. In the center, a modal dialog box titled 'Analytics View' is open. This dialog has two main sections: 'Clear Date' and 'Due Date', each with date input fields ('dd-mm-yyyy') and calendar icons. Below these are 'Baseline Create Date' and 'Invoice Currency' fields. At the bottom of the dialog are 'SUBMIT' and 'CANCEL' buttons. To the right of the dialog, a table is visible with columns: Document Type, Posting Id, Total Open amount, and Baseline Create Date. The table contains five rows of data. At the bottom of the table, there are buttons for 'EDIT' and 'DELETE', and a message 'Rows per page: 5 1-5 of 200 >'. The background of the main interface shows a grid of data with columns: Sl no, Business Code, Customer Number, Clear Date, and Baseline Year.

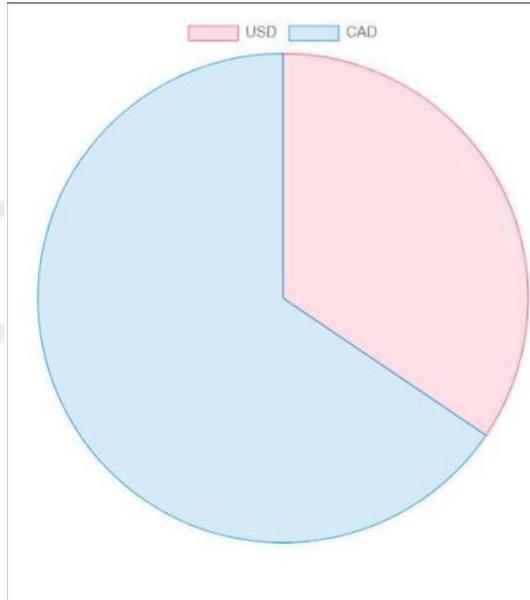
The user will have a privilege to go for single parameter or multi parameter based on their choices and preferences.

On submitting the parameters the web application will open the dialog window which will provide the user with an illustration of a bar graph and pie chart which will be formed based on the parameterized data that the user had selected.

The bar graph will be showing data for the total open amount and number of customers for all Business.



Pie Chart for Currencies :The Pie chart will be containing the selected currencies.



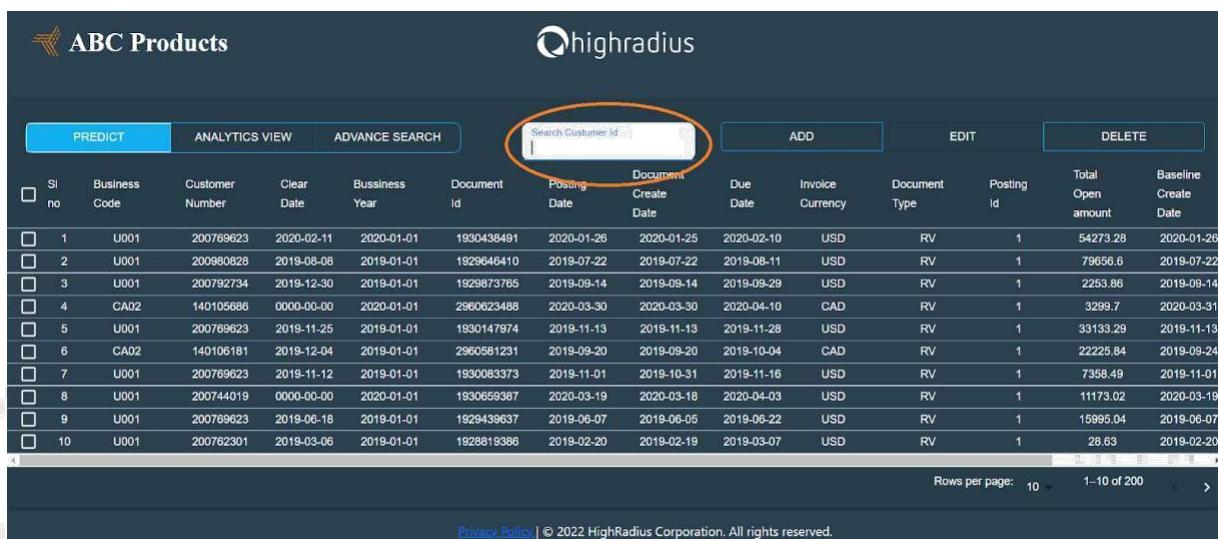
There will be a close button to close the window and redirect the user to the main screen(UI).

The analytics view button would be a simple tool that the user can use to view data based on their preferences and could facilitate decision making.

Searchable fields behavior:

- a.Business Year- Text Field
- b.Customer Id-Text Field
- c.Invoice No - Text Field
- d.Document Id - Text Field
- e.Customer Id - Equal Search

Users should be able to search for a customer by typing text in the Customer id integer field. Search is not case-sensitive.



The screenshot shows a grid-based application interface. At the top, there are tabs for "PREDICT", "ANALYTICS VIEW", and "ADVANCE SEARCH". On the right side of the header, there are buttons for "ADD", "EDIT", and "DELETE". Below the header is a search bar labeled "Search Customer Id" with a magnifying glass icon. A red oval highlights this search bar. The main area is a grid table with the following columns: Sl no, Business Code, Customer Number, Clear Date, Business Year, Document Id, Posting Date, Document Create Date, Due Date, Invoice Currency, Document Type, Posting Id, Total Open amount, and Baseline Create Date. The data in the grid consists of 10 rows of customer information. At the bottom of the grid, there are pagination controls: "Rows per page: 10", "1–10 of 200", and navigation arrows. The footer contains a link to "Privacy Policy" and the text "© 2022 HighRadius Corporation. All rights reserved."

Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date
<input type="checkbox"/>	1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	USD	RV	1	54273.28	2020-01-26
<input type="checkbox"/>	2	U001	200880828	2019-08-08	2019-01-01	1829646410	2019-07-22	2019-07-22	USD	RV	1	79656.6	2019-07-22
<input type="checkbox"/>	3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	USD	RV	1	2253.86	2019-09-14
<input type="checkbox"/>	4	CA02	1401056886	0000-00-00	2020-01-01	2960823488	2020-03-30	2020-03-30	CAD	RV	1	3299.7	2020-03-31
<input type="checkbox"/>	5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	USD	RV	1	33133.29	2019-11-13
<input type="checkbox"/>	6	CA02	140106181	2019-12-04	2019-01-01	2960581231	2019-09-20	2019-09-20	CAD	RV	1	22225.84	2019-09-24
<input type="checkbox"/>	7	U001	200769623	2019-11-12	2019-01-01	1930083373	2019-11-01	2019-10-31	USD	RV	1	7358.49	2019-11-01
<input type="checkbox"/>	8	U001	200744019	0000-00-00	2020-01-01	1930659387	2020-03-19	2020-03-18	USD	RV	1	11173.02	2020-03-19
<input type="checkbox"/>	9	U001	200769623	2019-06-18	2019-01-01	1929439637	2019-06-07	2019-06-05	USD	RV	1	15995.04	2019-06-07
<input type="checkbox"/>	10	U001	200762301	2019-03-06	2019-01-01	1928819386	2019-02-20	2019-02-19	USD	RV	1	26.63	2019-02-20

Grid Panel Section:

The Seventh Section is the **Grid Header** section, consisting of all the different column name headers and a **Select All and Deselect All** functionality.

Following are the columns to be displayed in the UI:

1. sl_no
2. business_code
3. cust_number

4. clear_date
5. buisness_year
6. doc_id
7. posting_date
8. document_create_date
9. due_in_date
- 10.invoice_currency
- 11.document type
- 12.posting_id
- 13.total_open_amount
- 14.baseline_create_date
- 15.cust_payment_terms
- 16.invoice_id

ABC Products **Highradius**

Invoice List

Sl no	Business Code	Customer Number	Clear Date	Business Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date
1	U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26
2	U001	200980828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22
3	U001	200792734	2019-12-30	2019-01-01	1929873765	2019-09-14	2019-09-14	2019-09-29	USD	RV	1	2253.86	2019-09-14
4	CA02	140105686	0000-00-00	2020-01-01	2900623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31
5	U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13

Rows per page: 5 | 1–5 of 200

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The Grid panel section will be divided into 3 portions:

- The header of the grid will have a **Predict button** on the top left corner followed by an **Advance Search Button**, an **Analytics view**, an **Add Button**, an **Edit Button**, a **Delete Button**, and a **Search Bar**.
- The name of the grid that is **Invoice List** will be mentioned in the top left corner of the grid.
- The second portion is the table with customer invoice data as rows and the following columns:

The list of all the columns to be represented on the UI are as follows:

1. sl_no
2. business_code

3. cust_number
4. clear_date
5. buisness_year
6. doc_id
7. posting_date
8. document_create_date
9. due_in_date
10. invoice_currency
11. document type
12. posting_id
13. total_open_amount
14. baseline_create_date
15. cust_payment_terms
16. invoice_id

The Grid consists of the **Grid Rows** that contains the required data that is loaded from the CSV File. On a single page, only 10 invoices' data is displayed. Users can select single or multiple rows



<input type="checkbox"/> Sl no	Business Code	Customer Number	Clear Date	Bussiness Year	Document Id	Posting Date	Document Create Date	Due Date	Invoice Currency	Document Type	Posting Id	Total Open amount	Baseline Create Date
<input type="checkbox"/>	1 U001	200769623	2020-02-11	2020-01-01	1930438491	2020-01-26	2020-01-25	2020-02-10	USD	RV	1	54273.28	2020-01-26
<input type="checkbox"/>	2 U001	200980828	2019-08-08	2019-01-01	1929646410	2019-07-22	2019-07-22	2019-08-11	USD	RV	1	79656.6	2019-07-22
<input type="checkbox"/>	3 U001	200792734	2019-12-30	2019-01-01	1929873765	2019-08-14	2019-09-14	2019-09-29	USD	RV	1	2253.86	2019-09-14
<input type="checkbox"/>	4 CA02	140105686	0000-00-00	2020-01-01	2960623488	2020-03-30	2020-03-30	2020-04-10	CAD	RV	1	3299.7	2020-03-31
<input type="checkbox"/>	5 U001	200769623	2019-11-25	2019-01-01	1930147974	2019-11-13	2019-11-13	2019-11-28	USD	RV	1	33133.29	2019-11-13
<input type="checkbox"/>	6 CA02	140106181	2019-12-04	2019-01-01	2960581231	2019-09-20	2019-09-20	2019-10-04	CAD	RV	1	22225.84	2019-09-24
<input type="checkbox"/>	7 U001	200769623	2019-11-12	2019-01-01	1930083373	2019-11-01	2019-10-31	2019-11-16	USD	RV	1	7358.49	2019-11-01
<input type="checkbox"/>	8 U001	20074019	0000-00-00	2020-01-01	1930659387	2020-03-19	2020-03-18	2020-04-03	USD	RV	1	11173.02	2020-03-19
<input type="checkbox"/>	9 U001	200769623	2019-06-18	2019-01-01	1929439637	2019-06-07	2019-06-05	2019-06-22	USD	RV	1	15995.04	2019-06-07
<input type="checkbox"/>	10 U001	200762301	2019-03-06	2019-01-01	19298819386	2019-02-20	2019-02-19	2019-03-07	USD	RV	1	28.63	2019-02-20

Rows per page: 10 < 1–10 of 200 >

Sorting & Searching

1. Sorting:

1. Sorting should be performed on all the columns:
2. Clicking on the column headers should sort the values of the whole grid

a. First click - Ascending

b. Second click - Descending

Column headers should have a double arrow symbol near the column name to indicate they can be sorted.

Horizontal Scroll Bar

The **Horizontal Scroll Bar** which can be used to scroll across the screen to access the data in various columns.

Footer

The Grid consists of the **Footer** which will have the following three parts:

- 'Viewing <starting count> - < end count> of <total count>' text on left. It shows invoices currently active.

Example1: Viewing 1-10 of 500 means that the user is seeing 1-10 Invoices present on the page out of the total number of invoices which is 500.

- Pagination arrows with text '<present page number> of <total page number>' in

center. Clicking on the back arrow takes the user to the previous page. Clicking on the next arrow takes the user to the next page. Back arrow should be disabled when the user is on the first page and the next arrow should remain disabled if the user is on the last page.

Example2: 2 of 50 means that the user is currently on 2nd page and seeing invoices 11-20 out of the total 500 invoices.

- 'Copyright 2022 Highradius.All Rights Reserved.' in the middle.

AI support for the prediction of payment date

1. As part of this project, you need to predict the Payment Date of each invoice.
2. In order to achieve this, there should be a button named “Predict” present on the UI besides the “Advanced Search” button.
3. Users can select one or more **invoices** and click on the “Predict” button to predict the payment dates of those selected invoices.
4. Once the button is clicked, the **Predicted Payment Date** column should get populated with the predicted dates derived from the ML model.
5. **The “Predict” button should remain disabled if no invoices are selected.**

Glossary

1. **Invoice** - A document that is issued by a seller to a buyer when some goods are purchased. The fields which can be part of the invoice are defined below
2. **Advanced Search** - A pop-up window, which depicts the illustration that enables the user to search with single or multiple parameter values from the grid.

3. **Predict** - The predict button is used as a tool to predict the Payment Date of each invoice.
4. **B2B** - Business to Business
5. **B2C**- Business to Consumer
6. **C2C** - Consumer to Consumer
7. **Payment Terms** - These indicate the period within which payments should be made and how. These terms are usually included in the invoices generated by companies and sent to customers.Eg Net 30, Net 60



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CONCLUSION

Finally I concluded that I've got hands on working experience on various technology which was very new to me like HTML, CSS, Python, Javascript, ReactJS, JavaServlet.

Get Idea of how to approach a problem to get it's solution.

Got an industry experience and way of looking and observing the technology and problems from the prospectus of industry.

The most valuable thing that I learnt during this internship is that I come to know the conversion of the real word problem in the format so that machine can learn it and solve it in effective way which is more accurate than human approach and also in very less time than what it would be solved by human.

REFERENCES

1. [YouTube Tutorials](#)
2. [programiz](#)
3. [Resource share by the company](#)



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