

CV Builder

- A real-world application built using JAVA



Problem Statement

To Create a CV Builder application that

- Provides a template regarding what information to include in a CV (Ex: Picture, Bio-data, Skills, Qualification, Work Experience)
 - Collects the information in a form
 - Presents it in a structured template in a document by placing fields in appropriate positions in the page
 - Generates the document as a pdf and lends it to the user for their utility
 - Stores previously entered information (in a database) and retrieves it when searched for making changes to existing CV.
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Motivation to take up the problem

A candidate with apt credentials, required skill set and experience for a job often finds difficulty in presenting the same to employers. Crisp and clear format for a resume is essential in order to project the skills one has acquired.

The team, being fervent in building our CV from our first year of college, saw this as an opportunity to find a solution to this common problem.

We also felt that java has a programmer-friendly methodology to provide Graphical-User-Interface to create a form and provides convenient modes of connection to databases. Hence, the team decided to implement the idea in the form of a simple application with a user-friendly interface and sql connectivity for storage and retrieval of data.

Scope and Limitations

Currently, we have provided only one template to the user to present their data. However, the scope of the project could be extended to provide multiple templates with various sets of fields to be included. Choice of color palettes could also be introduced.

The project, as yet, does not have a login/signup process where a user can access only their CV. Searching for one's CV is simply based on a search by first name. Hence, to improve the privacy of the user, we need to implement a registration/signup process, provide each user with an ID and allow them to set a password which could be stored in a database in an encrypted format.

Limitations of the application also include the fact that it just takes the data as it is and helps only with the alignment, orientation and designing part of the CV and converting the input of the form into a pdf. It does not provide suggestions regarding the quality of content.

Future improvements could involve usage of AI to provide suggestions to the user regarding phrasing of sentences and prioritizing the skills acquired based on the position applied for.

Design of the Solution

1. The project is created using netbeans IDE and the following packages are imported:

- javax.swing
- java.awt
- java.sql
- java.io
- java.util
- java.text
- java.imageio

The following jar files are also added to the library

- Javafx-swt.jar
- Javafx.base.jar
- Javafx.controls.jar
- Javafx.fxml.jar
- Javafx.graphics.jar
- Javafx.media.jar
- Javafx.swing.jar
- javafx.web.jar
- sqlite-jdbc-3.40.10.jar (for java-sqlite connectivity)

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2. The user interface is designed using Swing components such as labels, text fields, buttons and panes. The layout includes sections for personal information, work experience, education and skills.
 3. Next, event handlers are implemented for the buttons, such as
 - “SAVE CV” - allows user to save the data in SQLite database
 - “Generate CV” - allows the user to create a pdf from the data
 - “CLEAR” - empties all the fields of the form and allows the user to enter data freshly.
 4. The input fields are validated to ensure that all the required fields are filled in before the user can save the CV.
 5. iText is used to create the PDF document, which can be readily downloaded.
 6. The user’s information is retrieved from the SQLite database and populates the text fields with the saved information when the user wants to edit their CV (with the help of user’s name).

Explore Design Alternatives

- Eclipse can be used to create a Java project in which a template engine, such as Apache Freemarker can be added to generate the CV in PDF, Word, or HTML format from a predefined template.
- Eclipse can be used to create a JavaFX project to create a Desktop application that allows users to create and edit their CVs and export them in different formats like word, PDFs.
- WonderShare PDFElement could be used instead of itextPDF
- Many data fields could be declared as members of the CV class instead of using them inside the methods alone
- File Handling could be used instead of sql tables so that, every time a new field is added to the form, it could be added to the files
- The design could be focused on the sequence of actions performed rather than on the button clicked by the user.

Identification of the process/modules/algorithms

- ☐ saveActionPerformed(ActionEvent evt)
- ☐ generateActionPerformed(ActionEvent evt)
- ☐ clearActionPerformed(ActionEvent evt)
- ☐ attachimageActionPerformed(ActionEvent evt)
- ☐ txt_searchKeyReleased(KeyEvent evt)

OOPs features used

Packages:

The entire java code is **one package- cv.generator**

Java packages primarily used/imported: **javax.swing, java.awt, java.sql, java.io, java.util**

Other addition: **itextpdf, jdbc connector**

Swing is used for the GUI of the project - the form and the search menus.

Sql connectivity is used for storing the input data into the sql table and retrieving the stored data when searched for

Itextpdf is used to write available content into the pdf file at the correct location with right amount of spacing and format.

Exception Handling:

Exception handling using try-catch-finally blocks are used at every step of the way for checking

- Null entries
- File Open/close - pdf
- Data type checks (retrieving string data from sql into string variable and int to int, etc)

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- Image Formats
 - Folder accessible/not when it is selected for saving CV

Inheritance:

The CV class inherits from javax.swing.JLabel class alone. However, many classes of swing package are used throughout the program in the form of packages.

Implementation of modules

The primary methods are:

- saveActionPerformed()
- generateActionPerformed():
- clearActionPerformed():
- attachImageActionPerformed():

When the **SAVE** button is clicked - saveActionPerformed method is invoked. The data entered in the form is filled into the sql table.

When the **FILE** button is clicked, attachImageActionPerformed method is invoked and it takes the user to a navigation panel where they can select an image from the system they are working in.

When the **GENERATE** button is clicked - generateActionPerformed method is invoked. The data in the input labels are written into the pdf in the required format.

When the **CLEAR** button is clicked - clearActionPerformed method is invoked, the data input fields are set to value empty string.

In the search bar, when a name is searched, If the entered name matches with an existing CV's name, the data fields of the form automatically get populated with the data of that CV from the sql table.

Integration of Modules

- Data taken as input in one method is carried towards the “Generate CV” function.
- Data from search is used in the program to make editions and subsequent “save” and “generate” actions.
- Every step of the application has try-catch blocks and additional finally blocks to avoid any error that could arise in subsequent methods. This allows smooth integration of modules allowing
 - No null pointer exceptions
 - Data of correct data type to flow through the program as parameters
 - Data from and to correct location (i.e. data comes from the text fields of the form for save function; data comes from the sql tables for the search function)

Output Screenshots

Initial Window

The screenshot shows a web application window titled "File" with standard window controls (minimize, maximize, close). The interface is divided into several sections:

- Search:** A search bar labeled "Search CV" with a text input field.
- PERSONAL INFORMATION:** A section with the following labels and input fields:
 - First name :
 - Surname :
 - Address Line 1 :
 - Address Line 2 :
 - Post Code :
 - Nationality:
 - Date of Birth :
 - Contact :
 - Email :
- Qualifications:** A section with the following labels and input fields:
 - College/University:
 - Title of Qualification A:
 - Title of Qualification B:
- SKILLS:** A section with two rows of input fields, each row containing two separate fields.
- WORK EXPERIENCE:** A section with three rows, each containing a "Company Name:" label and a "Work Done:" label, followed by a single input field for each.
- Buttons:** Three buttons are located in the bottom right corner:
 - Save CV (with a floppy disk icon)
 - Generate CV (with a document icon)
 - Clear (with an 'X' icon)

A large, dark blue rectangular area is visible on the right side of the form, possibly representing a placeholder for a profile picture or a decorative element.

After entering information in text fields

The screenshot shows a web application window titled "File" with a "Search" bar at the top. Below the search bar, the form is divided into three main sections: "PERSONAL INFORMATION", "SKILLS", and "WORK EXPERIENCE".

PERSONAL INFORMATION

- First name : Anya
- Surname : C B
- Address Line 1 : Kalavakkam
- Address Line 2 : Chengalpet
- Post Code : 600032
- Nationality : Indian
- Date of Birth : 06-07-2003
- Contact : 9999999999
- Email : sample@gmail.com

SKILLS

- Java : [input field]
- C++ : [input field]
- Python : [input field]
- C : [input field]

WORK EXPERIENCE

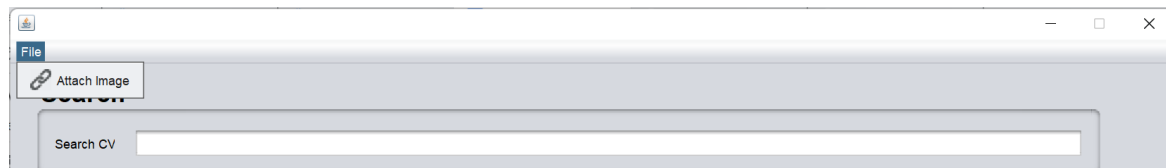
- Company Name : Google
- Work Done : CEO
- Company Name : Microsoft
- Work Done : COO
- Company Name : Alphabet
- Work Done : Co-Founder

Qualifications

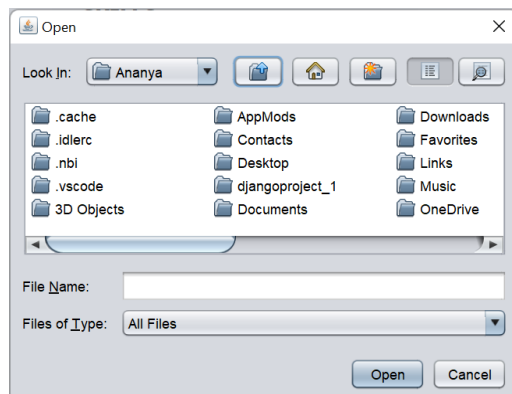
- College/University : SSN College of Engineering
- Title of Qualification A : BE Computer Science and Engineering
- Title of Qualification B : BS Data Science

On the right side of the form, there is a placeholder image for a profile picture. At the bottom right, there are three buttons: "Save CV", "Generate CV", and "Clear".

Attach Image Icon



After clicking "Attach Image" - File Navigation window shown



After going to the required location, selecting the required image and clicking open.

The screenshot shows a web application window titled "File" with a "Search" bar at the top. Below the search bar, there are four main sections: "PERSONAL INFORMATION", "SKILLS", "WORK EXPERIENCE", and "Qualifications". Each section contains several text input fields. A placeholder image of a person is shown on the right side of the form. At the bottom right, there are three buttons: "Save CV", "Generate CV", and "Clear".

Search

Search CV

PERSONAL INFORMATION

First name :

Surname :

Address Line 1 :

Address Line 2 :

Post Code :

Nationality:

Date of Birth :

Contact :

Email :

Qualifications

College/University:

Title of Qualification A:

Title of Qualification B:

SKILLS

Java C++

Python C

WORK EXPERIENCE

Company Name:


Work Done:

Company Name:

Work Done:

Company Name:

Work Done:



On clicking save CV

This screenshot is identical to the previous one, but with a confirmation dialog box overlaid in the center. The dialog box has a question mark icon and the text "Are you sure you want to add record?". It has two buttons: "Yes" and "No".

Search

Search CV

PERSONAL INFORMATION

First name :

Surname :

Address Line 1 :

Address Line 2 :

Post Code :

Nationality:

Date of Birth :

Contact :

Email :

Qualifications

College/University:

Title of Qualification A:

Title of Qualification B:

SKILLS

Java C++

Python C

WORK EXPERIENCE

Company Name:


Work Done:

Company Name:

Work Done:

Company Name:

Work Done:



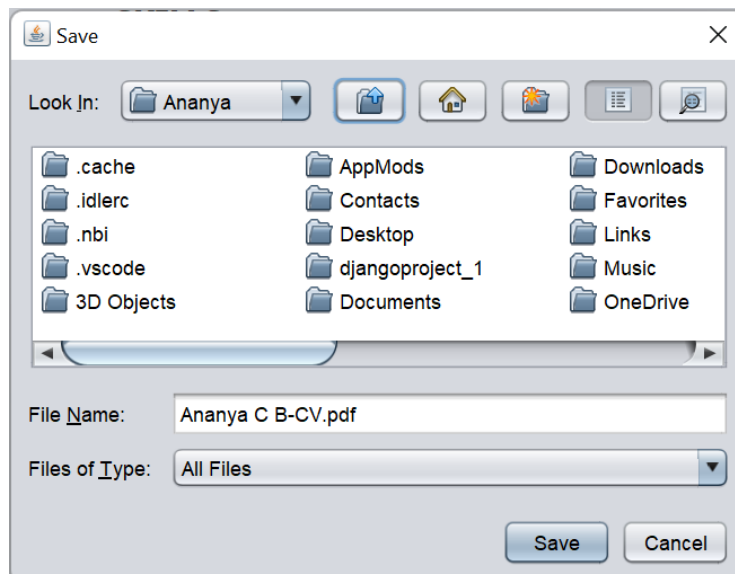
Add Record

Are you sure you want to add record?

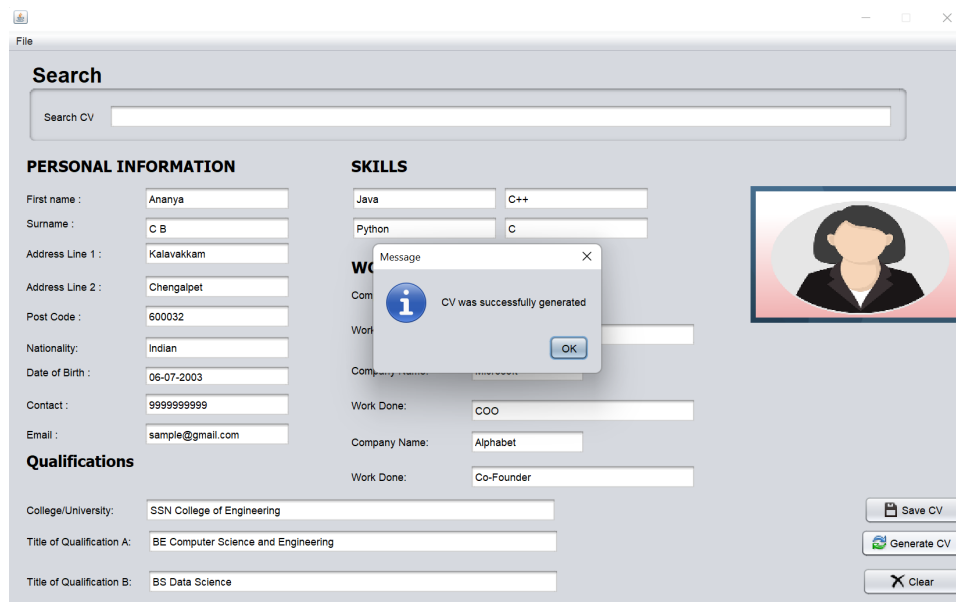
Clicking Yes:

The screenshot shows a web application for creating a CV. It has a 'Search' bar at the top. Below it are two main sections: 'PERSONAL INFORMATION' and 'SKILLS'. The 'PERSONAL INFORMATION' section includes fields for First name (Ananya), Surname (C B), Address Line 1 (Kalavakkam), Address Line 2 (Chengalpet), Post Code (600032), Nationality (Indian), Date of Birth (06-07-2003), Contact (9999999999), and Email (sample@gmail.com). The 'SKILLS' section includes fields for Java, C++, Python, and C. A 'Message' dialog box is open in the center, displaying an information icon and the text 'Data is saved successfully' with an 'OK' button. To the right of the form is a placeholder for a profile picture. At the bottom right, there are three buttons: 'Save CV', 'Generate CV', and 'Clear'. The 'Qualifications' section at the bottom includes fields for College/University (SSN College of Engineering), Title of Qualification A (BE Computer Science and Engineering), and Title of Qualification B (BS Data Science).

Clicking OK, and then selecting Generate CV. The application will direct you to the Navigation Menu



Go to the required folder and click SAVE.



The screenshot shows a web application for generating a CV. The interface is divided into several sections:

- Search:** A search bar labeled "Search CV".
- PERSONAL INFORMATION:** Fields for First name (Ananya), Surname (C B), Address Line 1 (Kalavakkam), Address Line 2 (Chengalpet), Post Code (600032), Nationality (Indian), Date of Birth (06-07-2003), Contact (9999999999), and Email (sample@gmail.com).
- Qualifications:** Fields for College/University (SSN College of Engineering), Title of Qualification A (BE Computer Science and Engineering), and Title of Qualification B (BS Data Science).
- SKILLS:** Fields for Java, C++, Python, and C.
- Work Experience:** Fields for Work Done (COO), Company Name (Alphabet), and Work Done (Co-Founder).
- Buttons:** "Save CV", "Generate CV", and "Clear".

A message box is displayed in the center, stating "CV was successfully generated" with an "OK" button.

Going to the selected location and opening the generated pdf

Ananya C B



CONTACT

sample@gmail.com

9999999999

Kalavakkam, Chengalpet, 600032

PERSONAL DETAILS

Nationality: Indian

Date of Birth: 06-07-2003

SKILLS

Java	Python
C++	C

QUALIFICATIONS

SSN College of Engineering

BE Computer Science and Engineering

BS Data Science

WORK EXPERIENCE

Google

- CEO

Microsoft

- COO

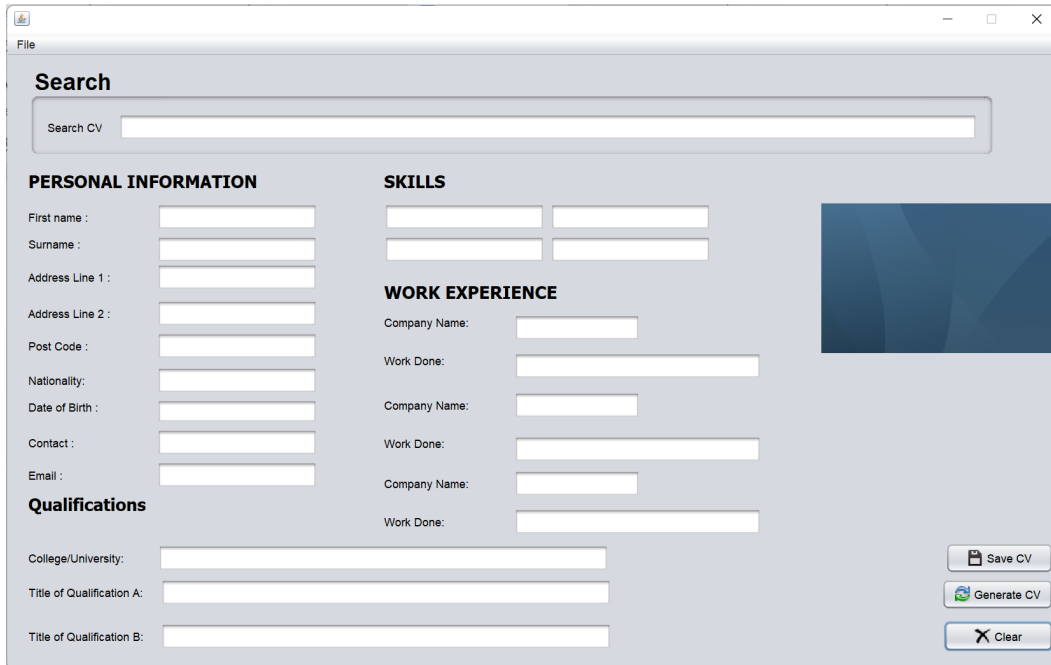
Alphabet

- Co-Founder

REFERENCES

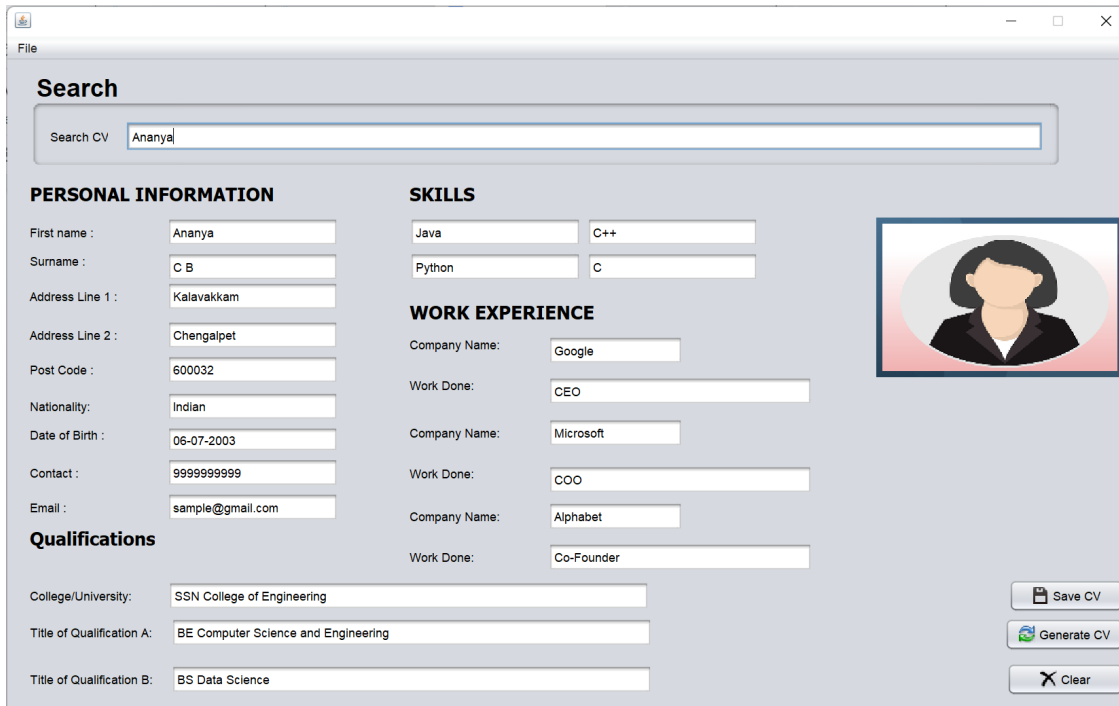
Available upon request

Clicking CLEAR button - clears all entered data



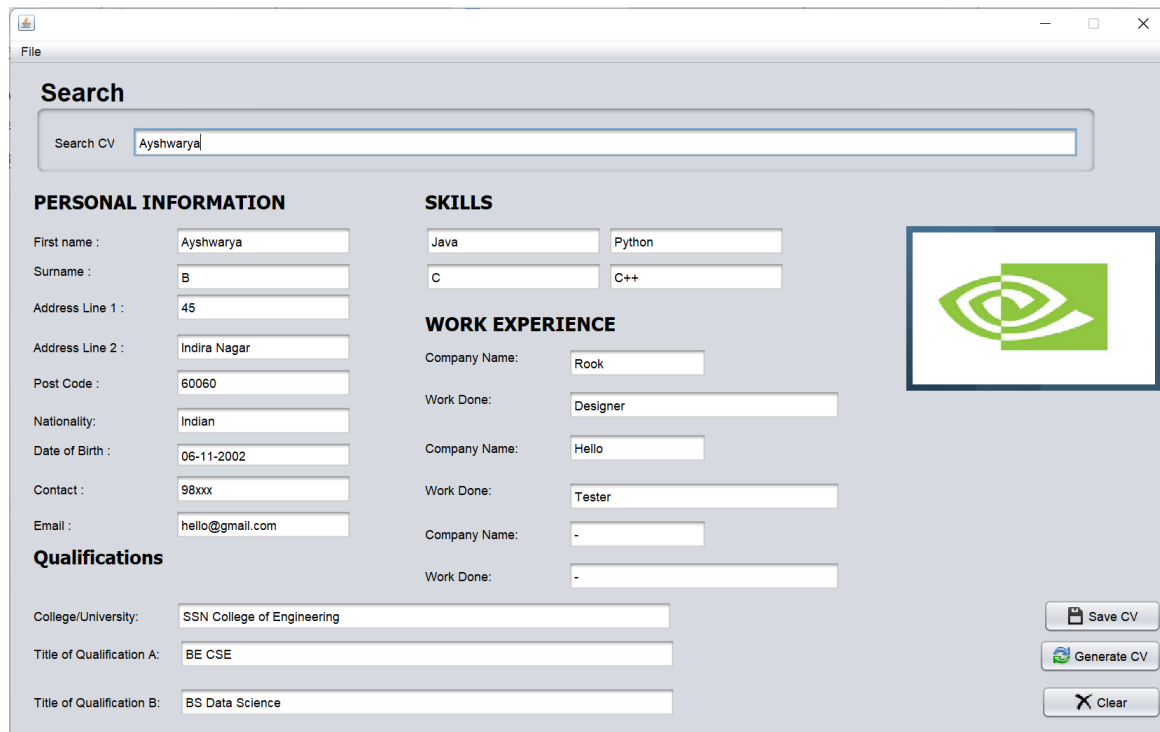
A screenshot of a web application window titled "File". The window contains a "Search" bar at the top with the placeholder text "Search CV". Below the search bar, the form is divided into three main sections: "PERSONAL INFORMATION", "SKILLS", and "WORK EXPERIENCE". The "PERSONAL INFORMATION" section includes fields for First name, Surname, Address Line 1, Address Line 2, Post Code, Nationality, Date of Birth, Contact, Email, College/University, Title of Qualification A, and Title of Qualification B. The "SKILLS" section includes fields for Company Name and Work Done. The "WORK EXPERIENCE" section includes fields for Company Name and Work Done. On the right side of the form, there is a placeholder image for a profile picture. At the bottom right, there are three buttons: "Save CV", "Generate CV", and "Clear".

On typing previously saved CV's name in the search bar: (the data populates the text fields)



A screenshot of the same web application window, but now with data populated in the form fields. The "Search" bar contains the text "Ananya". The "PERSONAL INFORMATION" section is filled with: First name: Ananya, Surname: C B, Address Line 1: Kalavakkam, Address Line 2: Chengalpet, Post Code: 600032, Nationality: Indian, Date of Birth: 06-07-2003, Contact: 9999999999, Email: sample@gmail.com, College/University: SSN College of Engineering, Title of Qualification A: BE Computer Science and Engineering, and Title of Qualification B: BS Data Science. The "SKILLS" section is filled with: Company Name: Google, Work Done: CEO, Company Name: Microsoft, Work Done: COO, Company Name: Alphabet, and Work Done: Co-Founder. The "WORK EXPERIENCE" section is filled with: Company Name: Google, Work Done: CEO, Company Name: Microsoft, Work Done: COO, Company Name: Alphabet, and Work Done: Co-Founder. On the right side, there is a placeholder image for a profile picture. At the bottom right, there are three buttons: "Save CV", "Generate CV", and "Clear".

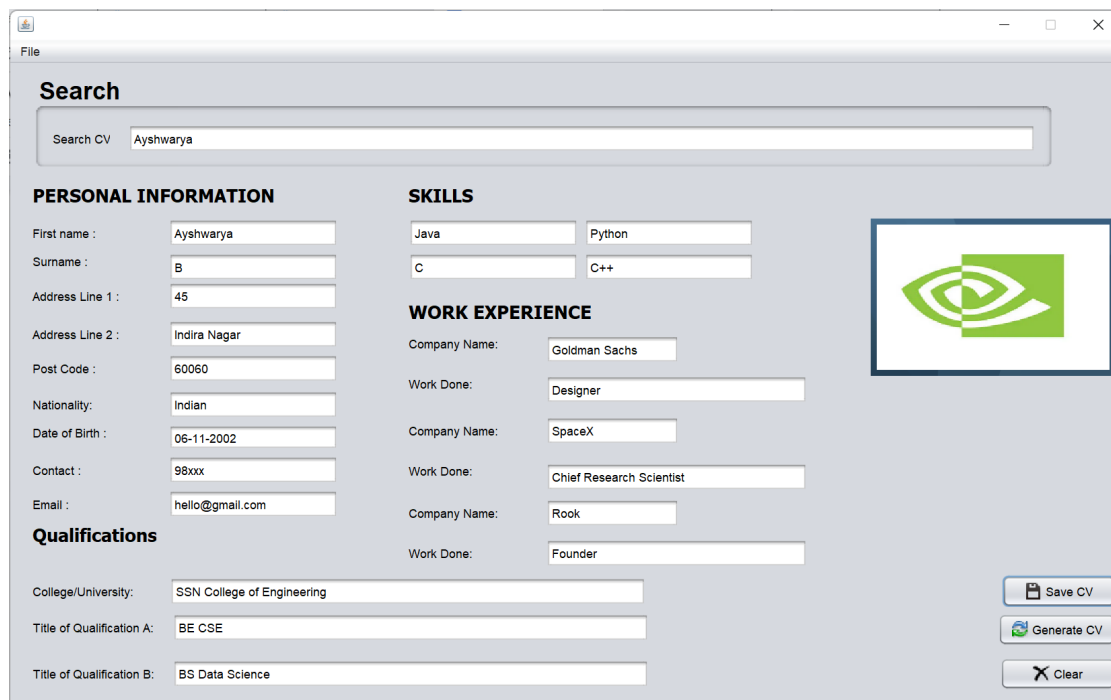
Typing one more existing CV name in the search bar:



The screenshot shows a web application window titled 'File'. At the top, there is a 'Search' section with a text input field containing 'Ayshwarya'. Below this, the form is divided into four main sections: 'PERSONAL INFORMATION', 'SKILLS', 'WORK EXPERIENCE', and 'Qualifications'. The 'PERSONAL INFORMATION' section includes fields for First name (Ayshwarya), Surname (B), Address Line 1 (45), Address Line 2 (Indira Nagar), Post Code (60060), Nationality (Indian), Date of Birth (06-11-2002), Contact (98xxx), and Email (hello@gmail.com). The 'SKILLS' section has fields for Java, Python, C, and C++. The 'WORK EXPERIENCE' section has three entries, each with a 'Company Name' and 'Work Done' field. The first entry has 'Rook' and 'Designer', the second has 'Hello' and 'Tester', and the third has '-' and '-'. The 'Qualifications' section has fields for College/University (SSN College of Engineering), Title of Qualification A (BE CSE), and Title of Qualification B (BS Data Science). On the right side, there is a green eye icon. At the bottom right, there are three buttons: 'Save CV', 'Generate CV', and 'Clear'.

Section	Field	Value
PERSONAL INFORMATION	First name :	Ayshwarya
	Surname :	B
	Address Line 1 :	45
	Address Line 2 :	Indira Nagar
	Post Code :	60060
	Nationality :	Indian
	Date of Birth :	06-11-2002
	Contact :	98xxx
SKILLS	Java	
	Python	
	C	
	C++	
WORK EXPERIENCE	Company Name:	Rook
	Work Done:	Designer
	Company Name:	Hello
	Work Done:	Tester
	Company Name:	-
	Work Done:	-
Qualifications	College/University:	SSN College of Engineering
	Title of Qualification A:	BE CSE
	Title of Qualification B:	BS Data Science

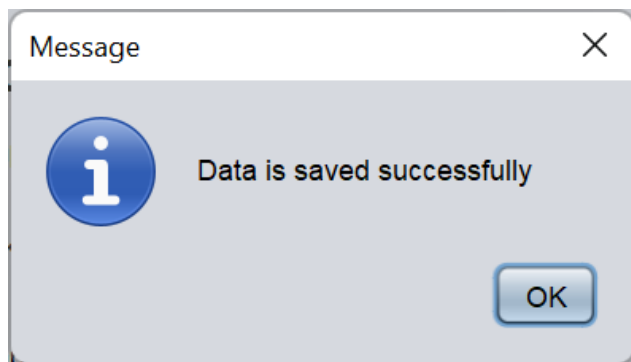
Making changes to the existing CV (adding extra work experience)



This screenshot shows the same CV builder application as the previous one, but with additional work experience added. The 'WORK EXPERIENCE' section now has five entries. The first two entries remain the same: 'Rook' (Designer) and 'Hello' (Tester). The third entry is 'Goldman Sachs' (Designer). The fourth entry is 'SpaceX' (Chief Research Scientist). The fifth entry is 'Rook' (Founder). The other sections remain unchanged.

Section	Field	Value
PERSONAL INFORMATION	First name :	Ayshwarya
	Surname :	B
	Address Line 1 :	45
	Address Line 2 :	Indira Nagar
	Post Code :	60060
	Nationality :	Indian
	Date of Birth :	06-11-2002
	Contact :	98xxx
SKILLS	Java	
	Python	
	C	
	C++	
WORK EXPERIENCE	Company Name:	Goldman Sachs
	Work Done:	Designer
	Company Name:	SpaceX
	Work Done:	Chief Research Scientist
	Company Name:	Rook
Qualifications	College/University:	SSN College of Engineering
	Title of Qualification A:	BE CSE
	Title of Qualification B:	BS Data Science

Clicking SAVE:



Clicking Generate CV, navigating to required location and saving it.

Opening the pdf at the saved location.

Ayshwarya B



CONTACT

hello@gmail.com

98xxx

45, Indira Nagar, 60060

PERSONAL DETAILS

Nationality: Indian

Date of Birth: 06-11-2002

SKILLS

Java	C
Python	C++

QUALIFICATIONS

SSN College of Engineering

BE CSE

BS Data Science

WORK EXPERIENCE

Goldman Sachs

- Designer

SpaceX

- Chief Research Scientist

Rook

- Founder

REFERENCES

Available upon request

Closing the application with the X symbol of the window.

Screenshots of the SQL Table

SQL Table:

select * from cv

id	firstname	surname	add1	add2	postcode	nationality	dob	telephone	email	skill1	skill2	skill3	skill4	company1
3	Gm													bleh
4	hello													bleh
6	Example	Sample	Winter Street	Bangalore	901876	Indian	08-11-2005	99xxxx	hello@gmail.com	Java	C++	C	Python	Google
8	Ritu	Sharma	T Nagar	Chennai	600040	Indian	06-10-1998	97xxx	example123@gmail.com	Creative Writing	Multi Lingual	Story Telling	Speech Therapist	xSeed
9	Ananya	C B	Kalavakkam	Chengalpet	600032	Indian	06-07-2003	9999999999	sample@gmail.com	Java	Python	C++	C	Google
10	Ayshwarya	B	45	Indira Nagar	60060	Indian	06-11-2002	98xxx	hello@gmail.com	Java	C	Python	C++	Goldman Sachs

wdone1	company2	wdone2	company3	wdone3	university
bleh	bleh	bleh	bleh	bleh	bleh
bleh	bleh	bleh	bleh	bleh	bleh
Testing	Microsoft	Coding	Goldman Sachs	Management	SSN College of Engineering
Kindergarten Teacher	Daisy school for special children	Held English classes for students with hearing and speaking disabilities			MOP Vaishnav College for Women
CEO	Microsoft	COO	Alphabet	Co-Founder	SSN College of Engineering
Designer	SpaceX	Chief Research Scientist	Rook	Founder	SSN College of Engineering

wdone2	company3	wdone3	university	qual1	qual2
bleh	bleh	bleh	bleh	bleh	bleh
bleh	bleh	bleh	bleh	bleh	bleh
Coding	Goldman Sachs	Management	SSN College of Engineering	BE Computer Science and Engineering	BS Data Science
Held English classes for students with hearing and speaking disabilities			MOP Vaishnav College for Women	BSc Psychology	BEd
COO	Alphabet	Co-Founder	SSN College of Engineering	BE Computer Science and Engineering	BS Data Science
Chief Research Scientist	Rook	Founder	SSN College of Engineering	BE CSE	BS Data Science

Inference and future extension

Inference:

A CV/Resume builder (generator) has been implemented using JAVA Programming Language, NetBeans IDE and SQLite.

- NetBeans IDE is used to develop the application's user interface and backend functionality.
- SQLite is used as the database management system to store and retrieve information about users and their resumes.
- iText for converting to PDF format, that is ready for usage and PDF editing.

Future extension:

1. Adding multiple templates: Allowing users to choose from a variety of templates, each with its own design and layout, can address the limitation of limited customization options.
2. Incorporating a built-in spell checker and grammar checker to improve the quality of the CV.
3. Adding a design editor: Allowing users to customize the template's design, colors, font, and layout to make it more visually appealing.
4. Incorporating a built-in resume optimization tool that suggests changes for the user based on their industry and job title.
5. Optimizing for ATS (Applicant Tracking System): Incorporating keywords and phrases commonly used by ATS systems to increase the chances of the CV passing through the initial screening process.
6. Adding login/signup page with increased privacy for users