DOCUMENTATION

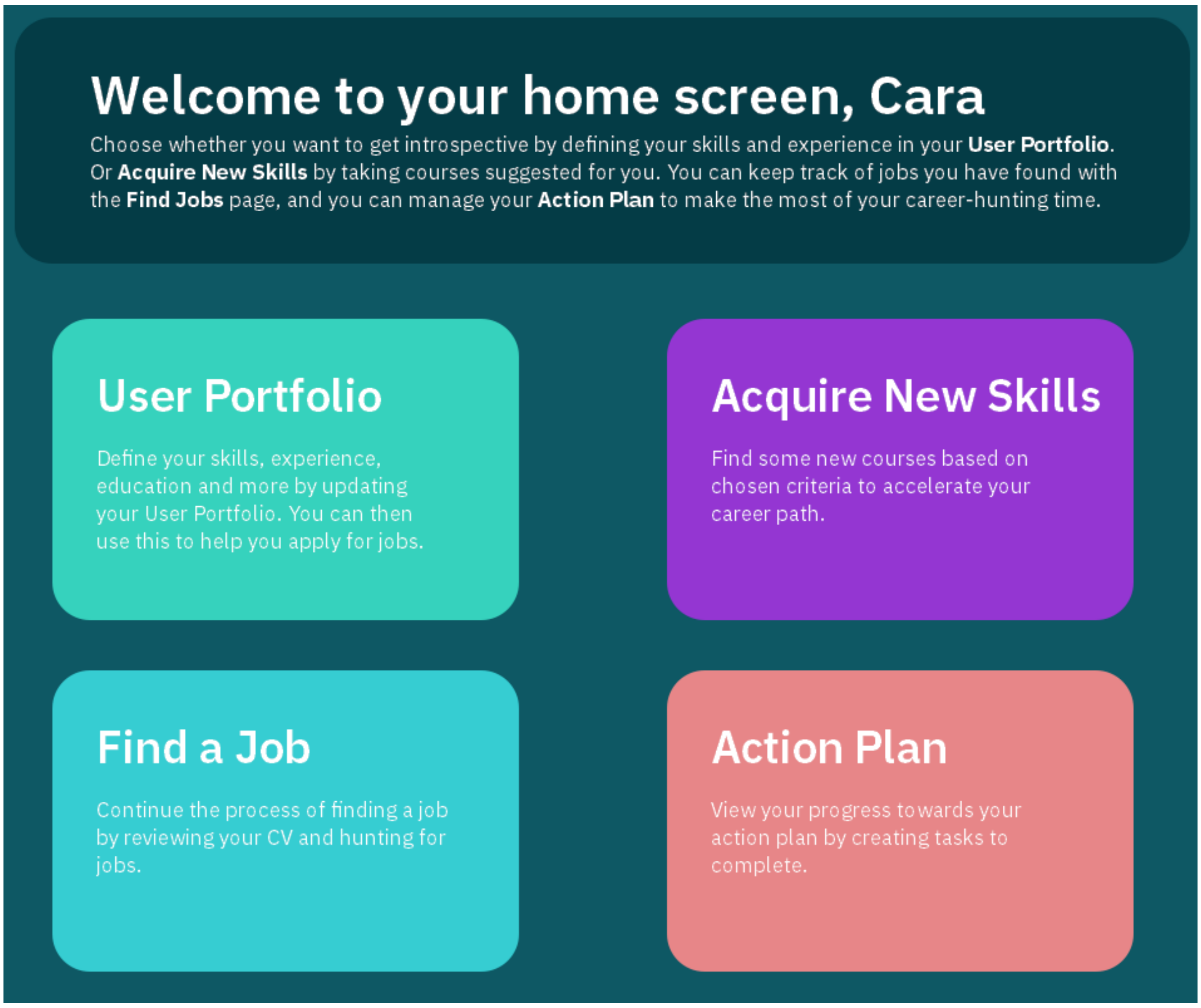
Instructions / User Manual

Please see the separate documentation for the User Manual. This provides guidance on:

- How to run the app (including system requirements)
- How to navigate the app
- The functionality of all pages

Description

A brief description of what the software does and how it does it.


Welcome to your home screen, Cara

Choose whether you want to get introspective by defining your skills and experience in your **User Portfolio**. Or **Acquire New Skills** by taking courses suggested for you. You can keep track of jobs you have found with the **Find Jobs** page, and you can manage your **Action Plan** to make the most of your career-hunting time.

User Portfolio

Define your skills, experience, education and more by updating your User Portfolio. You can then use this to help you apply for jobs.

Acquire New Skills

Find some new courses based on chosen criteria to accelerate your career path.

Find a Job

Continue the process of finding a job by reviewing your CV and hunting for jobs.

Action Plan

View your progress towards your action plan by creating tasks to complete.

Figure 1: the app's four main modules

The software is a desktop application which is designed to support career planning. Career planning can involve many stages, and this software aims to streamline the process of searching for jobs and careers by allowing a user to record details about both themselves and any jobs they have found. These key stages of introspection and job-hunting are fundamental in the process of securing a job, as jobseekers are in the best position to secure a job if they have knowledge of their own skills and abilities and how said skills relate to the requirements of a job.

Figure 1 shows the four main modules of the app:

- **User Portfolio**

- **Acquire New Skills**
- **Find a Job**
- **Action Plan**

Much like a CV or cover letter, in the app a user documents their skills and provides evidence of gaining said skills. However, the limitation of CVs and cover letters is that they are almost always job-specific, relating to a specific job role or job sector as per the requirements outlined in the advertisement for the job. This can lead to the creation of many single-use CVs and cover letters. Unless particularly organised, jobseekers may then have to trawl through their history of CVs to find any previous skills they have mentioned before when writing a new CV. A jobseeker may lose their documented skills in previous CVs by updating their CV, only to wish they had stored those skills somewhere else as they were relevant for whatever job they are applying for next.

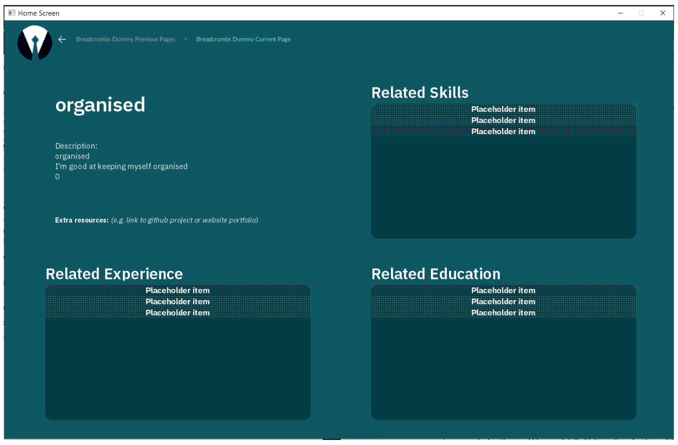
The app alleviates this limitation by allowing a jobseeker to document a multitude of skills, work experiences, and education in one location, creating a centralised 'job portfolio' for a jobseeker. The user can then easily build CVs and cover letters (outside of the app) by drawing together the appropriate aspects of their portfolio, in relation to the job requirements which they have also recorded in the app. As well as aiding in the process of building CVs (applying for jobs), preparation for interviews also becomes easier as all of the relevant information is in one unified location.

Jobseekers can also then use the knowledge discovered in the app to recognise any gaps in their knowledge or skills. The app provides resources for acquiring new skills, linking to websites which are well regarded for allowing people to develop their skills and discover more about their personalities. This places the user in a good position to both document their current skills, and improve their portfolio by exploring new skills.

The outline below details where each component is located in the app, and also states the relevant requirement (provided by the client) which has been fulfilled by said components.

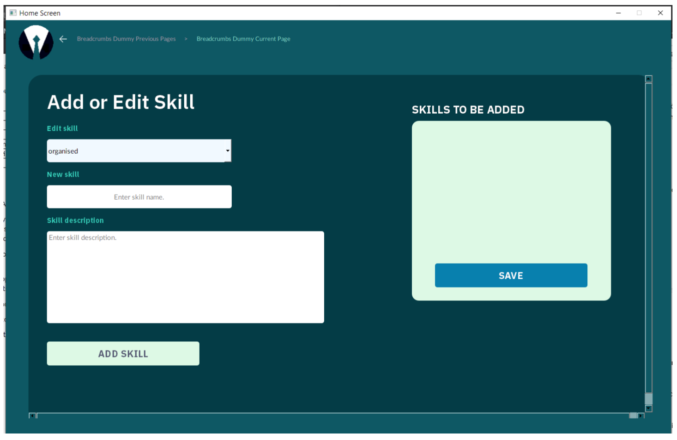
User Portfolio

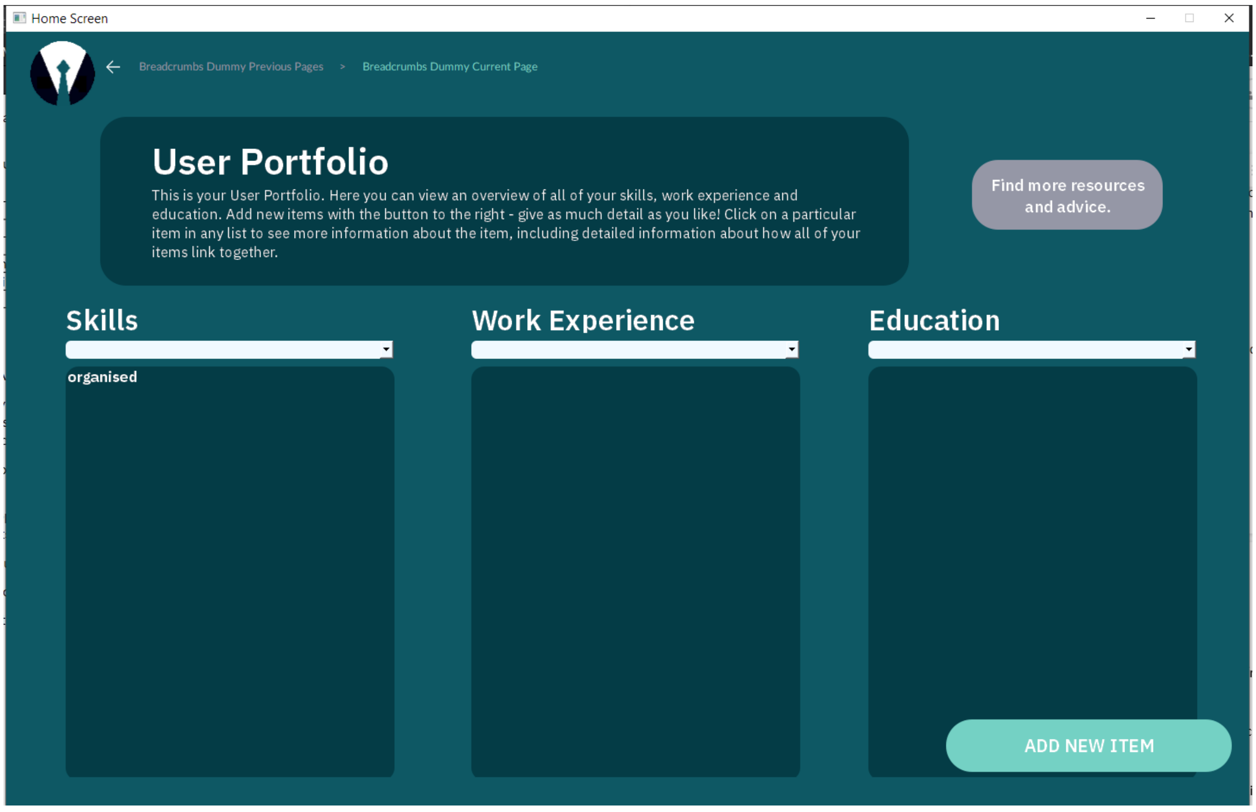
Requirement: Career planning typically starts with introspection, to discover more about yourself, your strengths, your weaknesses and your interests. The software *should provide links to useful resources for doing this, and should provide a way for the user to record their conclusions with evidence supporting those conclusions.*



Description:
organised
I'm good at keeping myself organised
0

Extra resources: *(e.g. link to github project or website portfolio)*




Home Screen
Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page
User Portfolio
Find more resources and advice.
Skills
organised
Work Experience
Education
ADD NEW ITEM

This is your User Portfolio. Here you can view an overview of all of your skills, work experience and education. Add new items with the button to the right - give as much detail as you like! Click on a particular item in any list to see more information about the item, including detailed information about how all of your items link together.

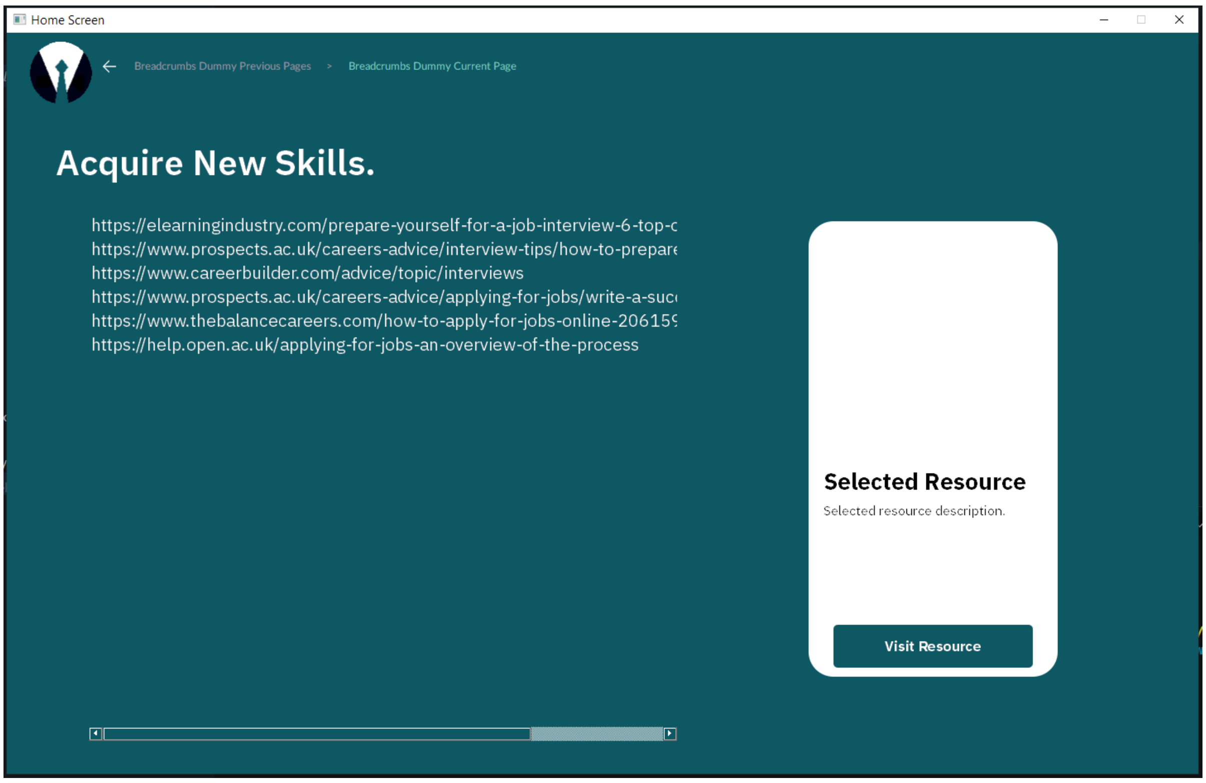
One page which displays lists of any of the following items which the user has added to the app:

- Skills
- Work Experience
- Education

One page where the user can add a new item to any list, edit an item from any list, delete any item from any list. One page where the user can view detailed information about any item, including the associated work experience or education or other skills from which the item was gained.

This allows the user to see both: a) an overview of their entire portfolio of skills, experiences, and education; and b) more detailed information about any skill, experience, or education which they have entered into the app.

Acquire New Skills


Home Screen
Breadcrumbs Dummy Previous Pages
>
Breadcrumbs Dummy Current Page
Visit Resource

Acquire New Skills.

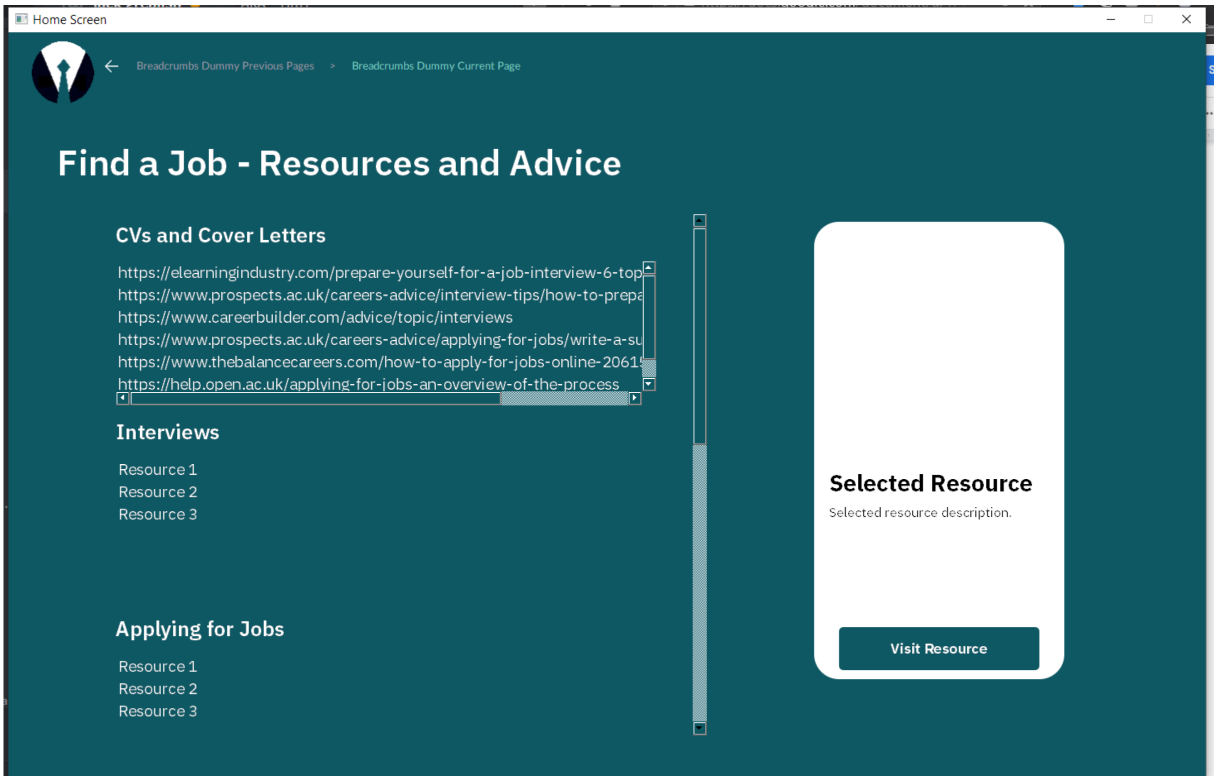
https://elearningindustry.com/prepare-yourself-for-a-job-interview-6-top-c
https://www.prospects.ac.uk/careers-advice/interview-tips/how-to-prepare
https://www.careerbuilder.com/advice/topic/interviews
https://www.prospects.ac.uk/careers-advice/applying-for-jobs/write-a-suc
https://www.thebalancecareers.com/how-to-apply-for-jobs-online-206159
https://help.open.ac.uk/applying-for-jobs-an-overview-of-the-process

Selected Resource
Selected resource description.

Page which lists resources users can utilise to acquire new skills.

Find a Job

Requirement: The software should allow the user to keep track of potential employers, sectors and the kinds of positions they aim to secure. The software should support the user in relating key requirements for those positions either with evidence that they meet those requirements, or with plans to acquire any missing skills or qualities. Users should be able to sort/filter jobs by geographic location.


Home Screen

Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

Find a Job - Resources and Advice

CVs and Cover Letters

https://elearningindustry.com/prepare-yourself-for-a-job-interview-6-top
https://www.prospects.ac.uk/careers-advice/interview-tips/how-to-prepa
https://www.careerbuilder.com/advice/topic/interviews
https://www.prospects.ac.uk/careers-advice/applying-for-jobs/write-a-su
https://www.thebalancecareers.com/how-to-apply-for-jobs-online-20615
https://help.open.ac.uk/applying-for-jobs-an-overview-of-the-process

Interviews

Resource 1
Resource 2
Resource 3

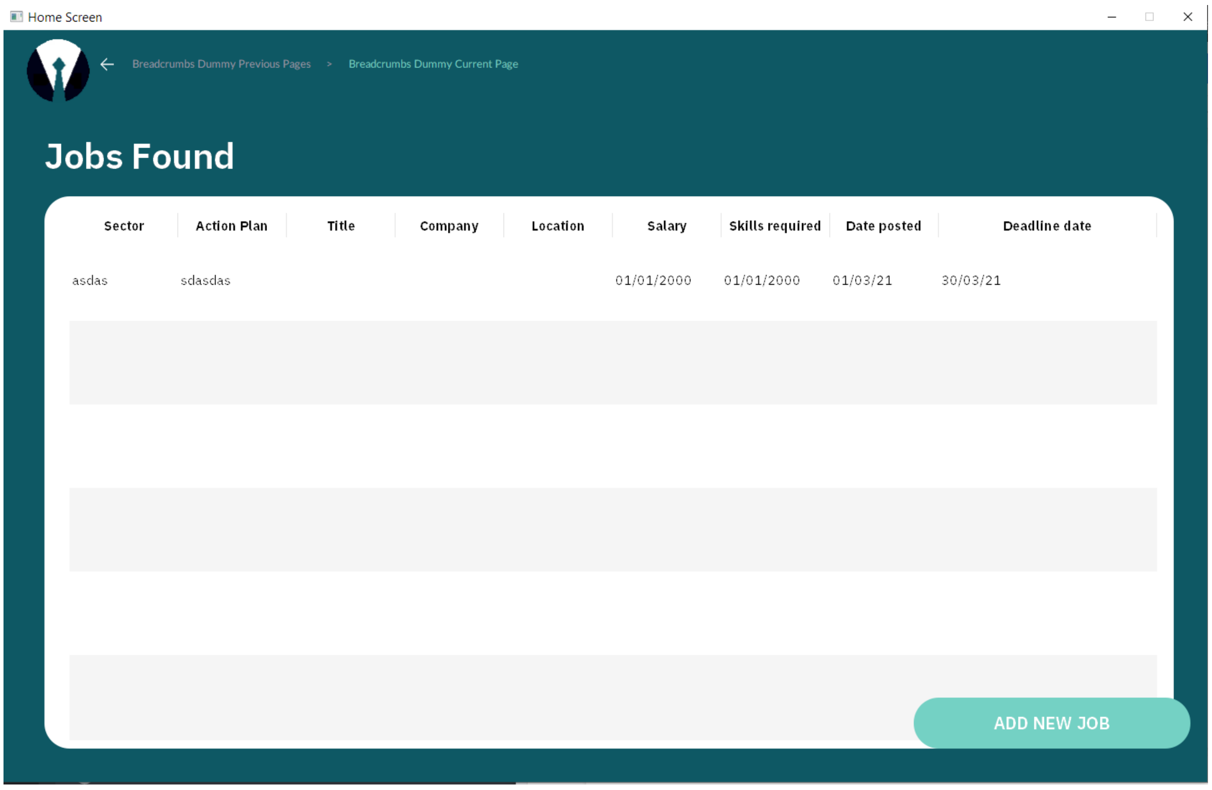
Applying for Jobs

Resource 1
Resource 2
Resource 3

Selected Resource

Selected resource description.

Page which lists resources which the user can use to find new jobs.

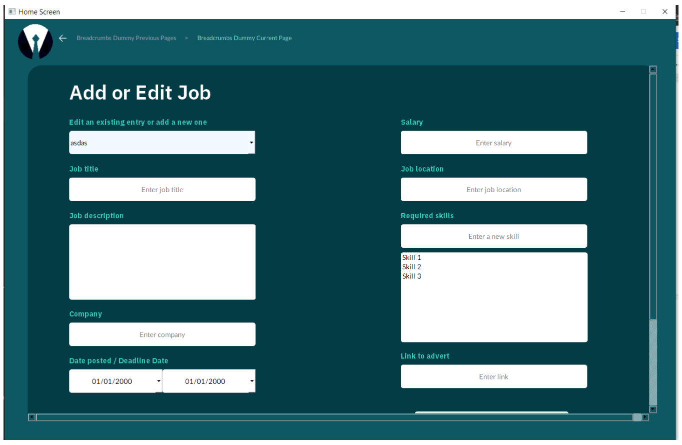

Home Screen

Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

Jobs Found

Sector	Action Plan	Title	Company	Location	Salary	Skills required	Date posted	Deadline date
asdas	sdasdas				01/01/2000	01/01/2000	01/03/21	30/03/21

Page which allows the user to: 1) view any jobs they have found; 2) add and edit jobs; 3) sort any of the categories in ascending or descending order.


Home Screen

Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

Add or Edit Job

Edit an existing entry or add a new one: asdas

Job title: Enter job title

Job description:

Company: Enter company

Date posted / Deadline Date: 01/01/2000 01/01/2000

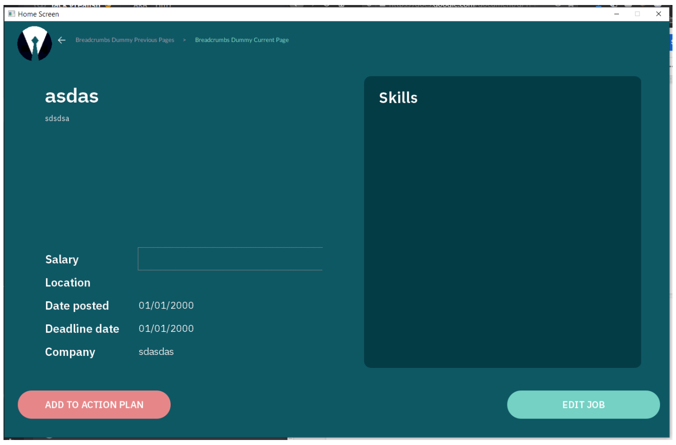
Salary: Enter salary

Job location: Enter job location

Required skills: Enter a new skill

Skill 1
Skill 2
Skill 3

Link to advert: Enter link


Home Screen

Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

asdas

sdsdsa

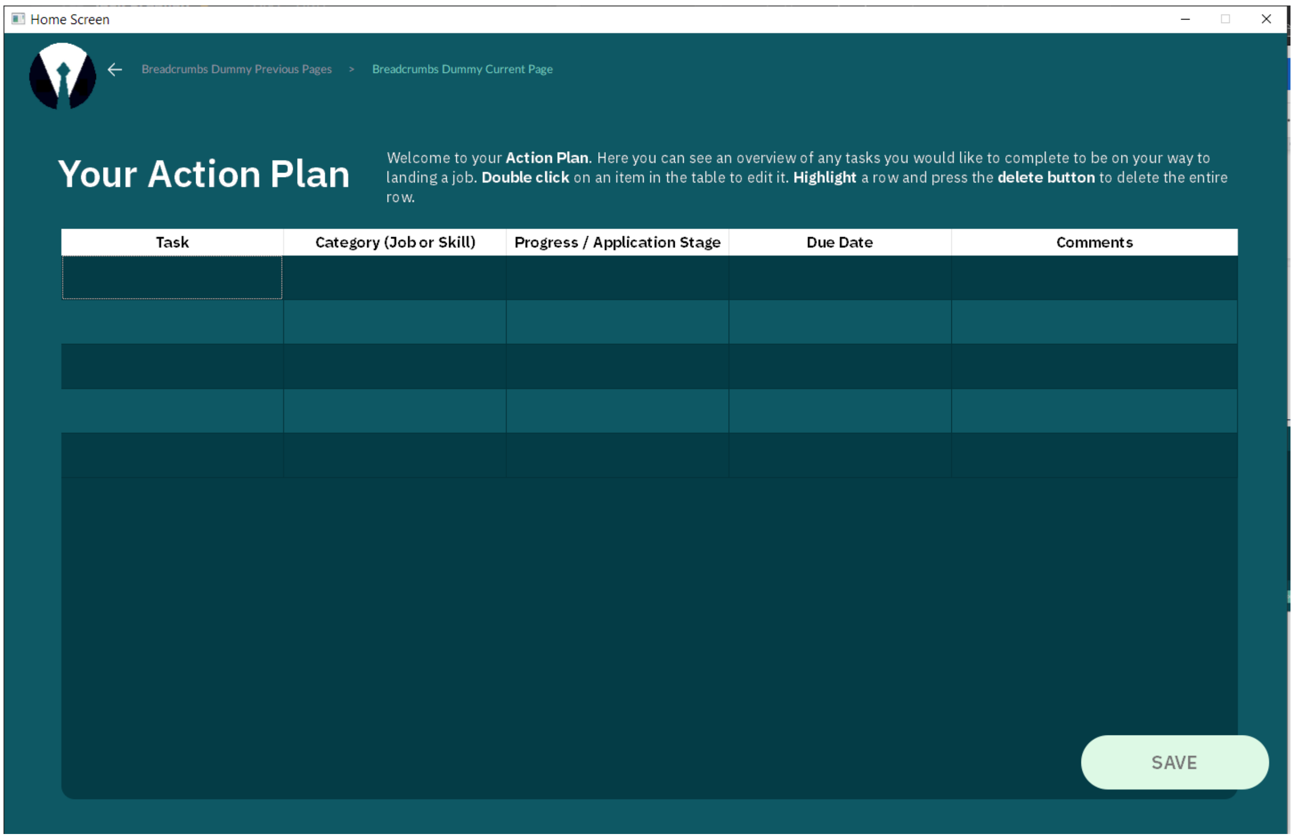
Salary	
Location	
Date posted	01/01/2000
Deadline date	01/01/2000
Company	sdasdas

Skills

Pages which allow the user to: 1) add or edit a job; 2) delete a job; 3) view detailed information about the job including the relevant skills; 4) add the job to the action plan.

Action Plan

Requirement: the software should allow the user to keep track of applications made, and the outcome of those applications.


Home Screen

Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

Your Action Plan

Welcome to your **Action Plan**. Here you can see an overview of any tasks you would like to complete to be on your way to landing a job. **Double click** on an item in the table to edit it. **Highlight** a row and press the **delete button** to delete the entire row.

Task	Category (Job or Skill)	Progress / Application Stage	Due Date	Comments

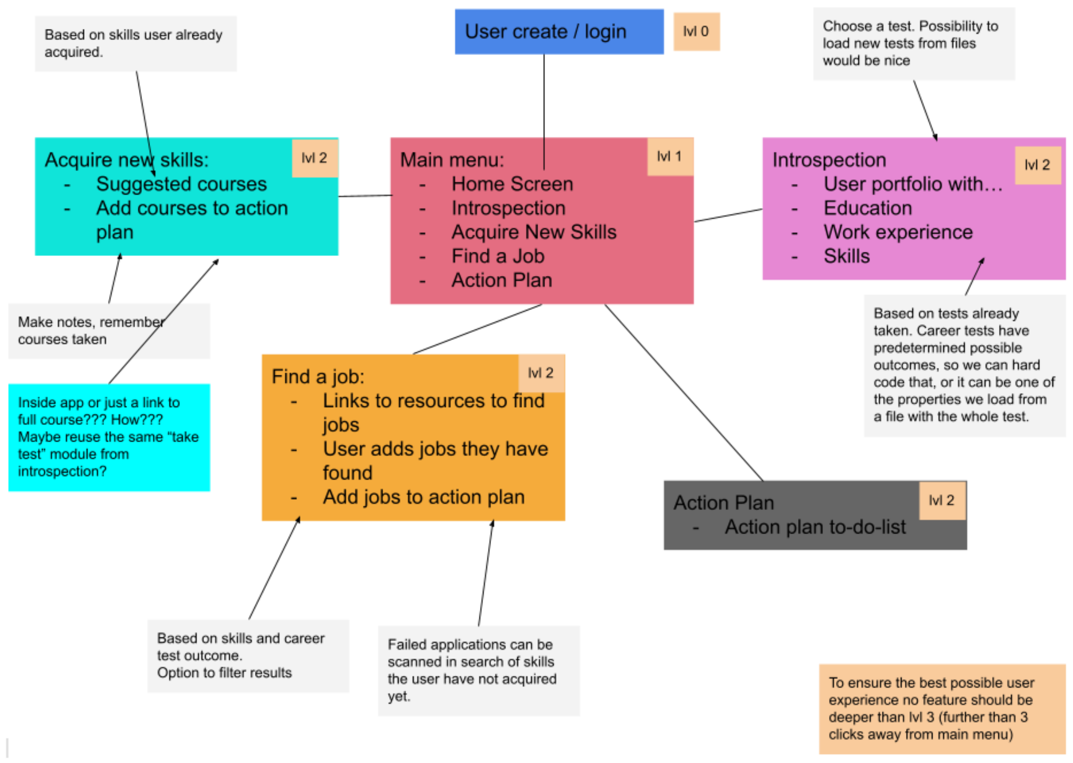
Page which allows the user to keep a record of any jobs which they intend to apply to, including important information such as the job deadline or the progress of their current application. Users can also add any skills which they intend to acquire by populating the action plan themselves.

Data Structures and Algorithms

A detailed discussion of the major design and implementation decisions (includes references/screenshots of code).

UI Design

The early stages of the UI began with a 'graph map' of the product (Figure 1). Designing the UI then became a streamlined process because the vision of how the app should look had already been created. Figure 1 shows said graph map. Each colour block was what we decided to call a 'module' of the app.



User create / login
lvl 0
Based on skills user already acquired.
Choose a test. Possibility to load new tests from files would be nice
Acquire new skills:
- Suggested courses
- Add courses to action plan
lvl 2
Main menu:
- Home Screen
- Introspection
- Acquire New Skills
- Find a Job
- Action Plan
lvl 1
Introspection
- User portfolio with…
- Education
- Work experience
- Skills
lvl 2
Make notes, remember courses taken
Inside app or just a link to full course??? How??? Maybe reuse the same "take test" module from introspection?
Find a job:
- Links to resources to find jobs
- User adds jobs they have found
- Add jobs to action plan
lvl 2
Based on tests already taken. Career tests have predetermined possible outcomes, so we can hard code that, or it can be one of the properties we load from a file with the whole test.
Action Plan
- Action plan to-do-list
lvl 2
Based on skills and career test outcome. Option to filter results
Failed applications can be scanned in search of skills the user have not acquired yet.
To ensure the best possible user experience no feature should be deeper than lvl 3 (further than 3 clicks away from main menu)

Figure 1

The UI design process thus followed a logical structure according to the modules:

1. Create the main page for each module
2. Create any pages which would be connected to that module
3. Ensure there were an appropriate number of buttons to connect the modules with their respective pages, and also a way of navigating between different modules (the navigation menu)

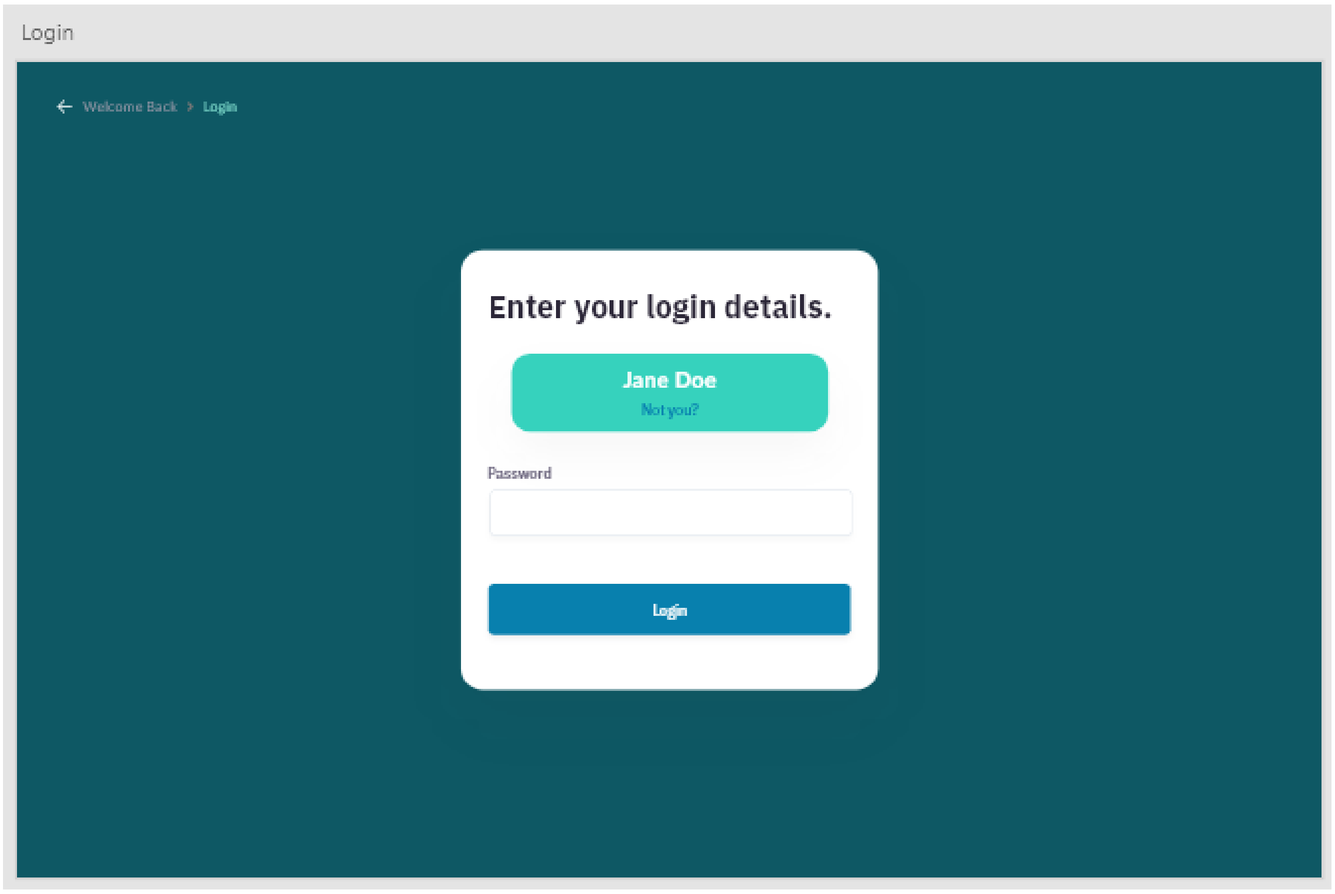
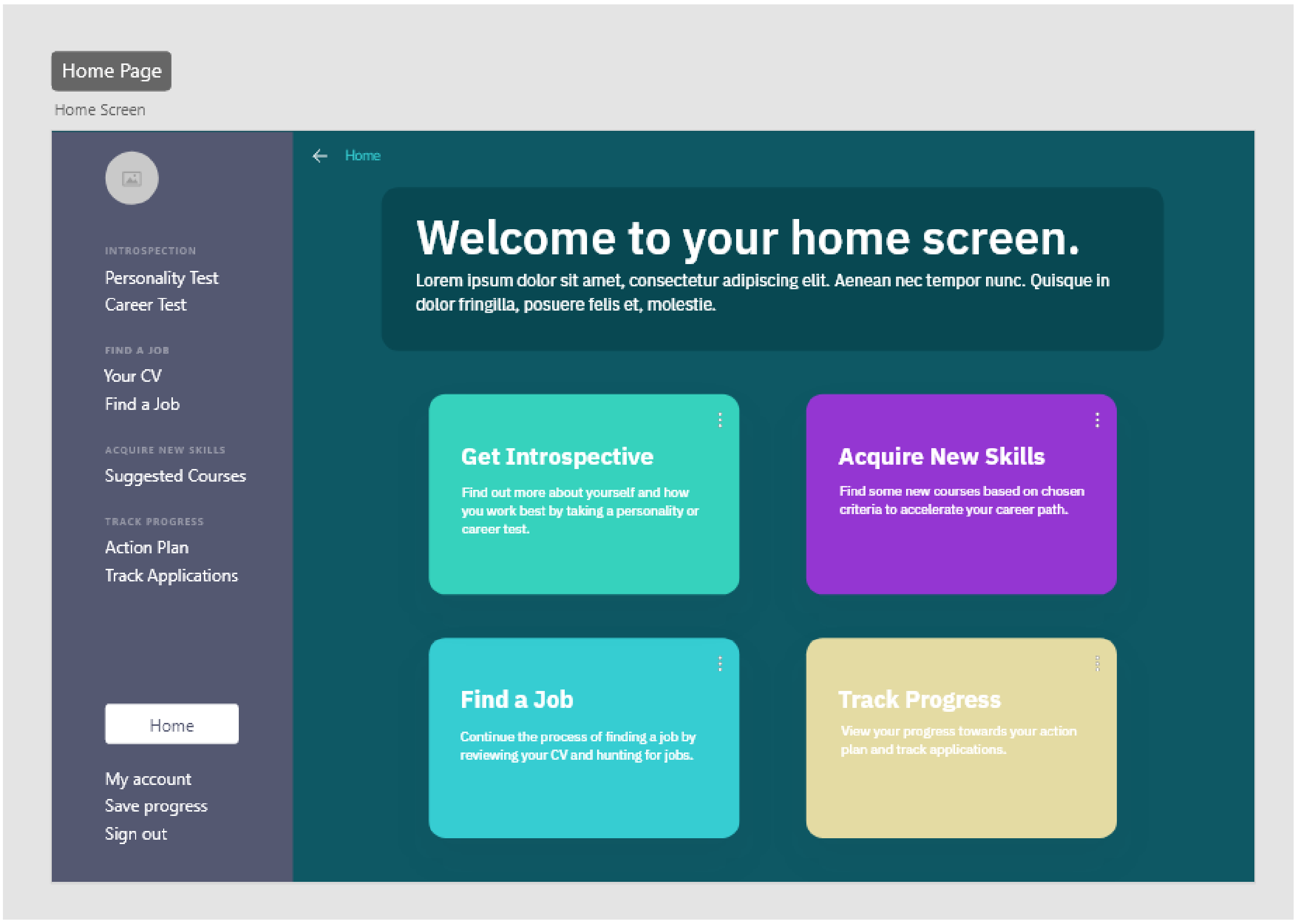


Figure 2 (Adobe XD prototype)

Most of the prototype UI design pages looked very similar to Figure 2 and Figure 3. These were created in Adobe XD.



Welcome to your home screen.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean nec tempor nunc. Quisque in dolor fringilla, posuere felis et, molestie.

Get Introspective

Find out more about yourself and how you work best by taking a personality or career test.

Acquire New Skills

Find some new courses based on chosen criteria to accelerate your career path.

Find a Job

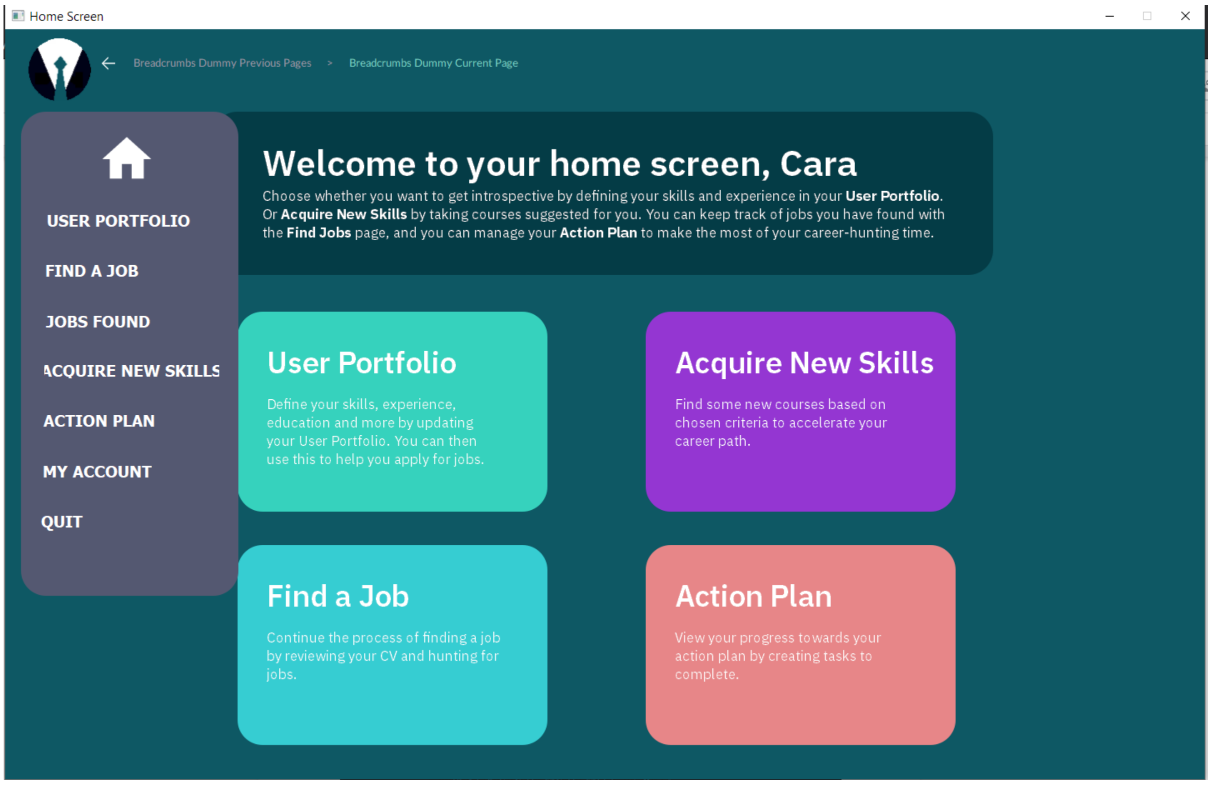
Continue the process of finding a job by reviewing your CV and hunting for jobs.

Track Progress

View your progress towards your action plan and track applications.

Figure 3 (Adobe XD prototype)

The actual UI frontend was then created with an application called QtDesigner, which uses the PyQt Python module for backend development. Surprisingly, despite the slightly outdated nature of QtDesigner, and the team's lack of experience with creating UI, we were able to create a UI that very closely reflected the prototypes created in Adobe XD (Figure 4 and Figure 5). Initial concerns, prior to creating the UI, was that the prototypes were perhaps too far-reaching and we would need to limit the creativity in favour for practicality (considering the product deadline and the team's level of experience).



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Action Plan

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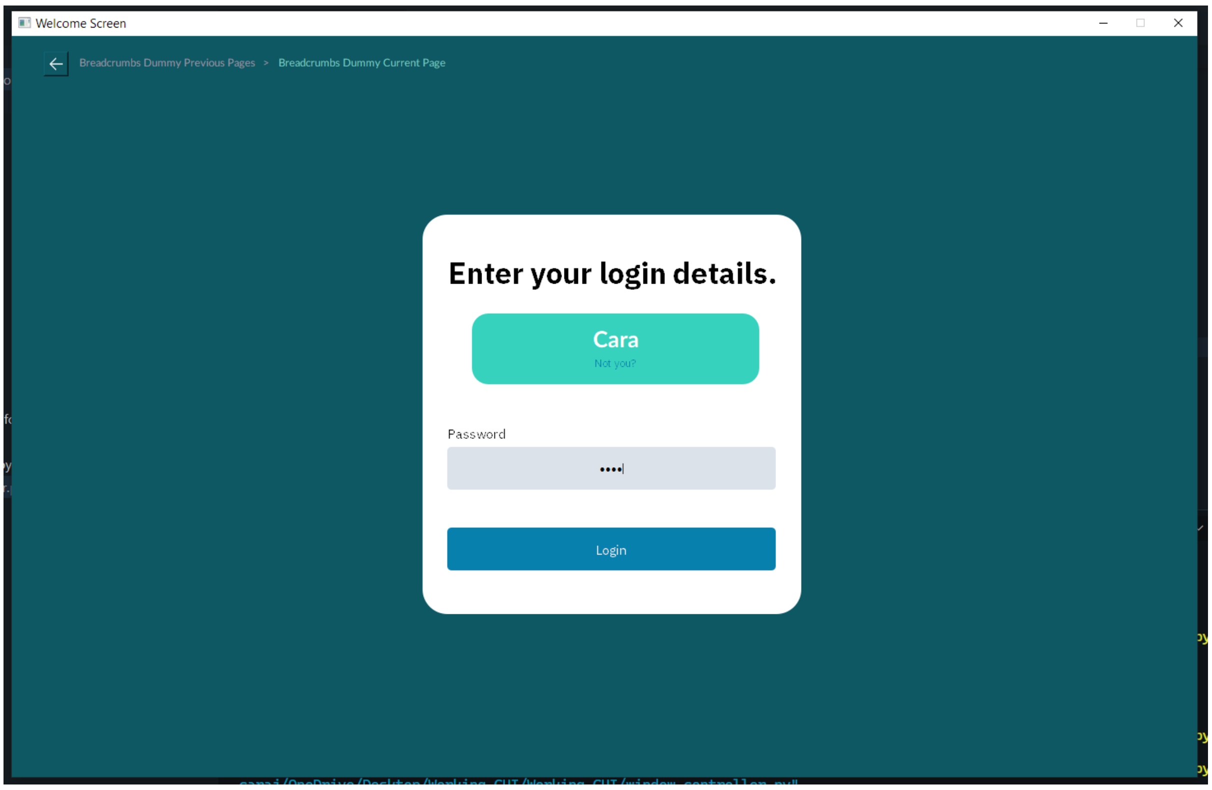
Figure 4 (Actual product)


Welcome Screen
Breadcrumbs Dummy Previous Pages > Breadcrumbs Dummy Current Page

Enter your login details.

Cara

Not you?

Password

••••

Login

Figure 5 (Actual product)

The final design was one which the team believes reflects minimalism and affords practicality in terms of not being too feature-rich or design-heavy (which would hinder backend development progress); whilst still maintaining a degree of elegance and aestheticity.

Multiple User Accounts

Possibility for multiple users was chosen because may prefer to use multiple accounts for many reasons such as convenience when applying for certain types of work, for example, on one of their accounts they may want to apply for jobs related to their degree, and for another account they may choose to apply for their desired part time job. Using multiple accounts makes this easier for them as they do not have to keep changing their details such as their CVs and cover letters.

Other reasons for use of multiple accounts may be to help a friend or family member to apply for jobs they would want as they may not be technologically skilled for online job searching. Of course, they will be entering the details of the user in question when creating the account.

Privacy may be another reason to create multiple accounts, for example, the user may prefer to apply for certain kind of jobs with a 'public' account while applying for another type of job with a 'private' account.

Database

Database chosen was Sqlite3 as it has been utilised with large success due to features such as automatic updates during revision of application content, meaning that the File/Save menu option becomes redundant, making it useful for agile development. Furthermore, contents can be updated dynamically and atomically effectively, so little or no operation/work is destroyed during power outage or crash. Numerous processes can be linked to the same program file and can read and write with no interference.

Sqlite3 also provides better performance as the application only has to import the required data instead of reading/writing each file from disk, making it more convenient for users to access and find their data, as well as processing.

Convenience in portability is also another reason to use Sqlite3 as collections of files can be condensed into an individual disk for a more efficient transfer through FTP, flash drive and email attachments. Moreover, many different programming languages can be used to access the same program file without compatibility issues.

Database Functions

1. **Description:** Create table userTest

Parameters

20 for username VARCHAR

20 for firstname VARCHAR

20 for password VARCHAR

What the function returns

Table including username, name and password each limited to 20 characters

---

1. **Description:** Insert into table userTest

Parameters

Username, firstname, password each for table

What the function returns

Data consisting of above parameters into table userTest

---

1. **Description:** Log in to the sqlite3 database and find user

Parameters:

Username, password for login

“Users.db” for sqlite.connect as db

"SELECT * FROM userTest WHERE username = ? AND password = ?" for find_user

find_user, [username, password] for cursor.execute

"Credentials not recognized" for print

What the function returns

Name of the user and their username, error message if their login details couldn’t be verified

1. **Description:** delete user from the database (password is required to authorise deletion

Parameters

username, password for delete_user

"Users.db" for sqlite3.connect as db

"DELETE FROM userTest WHERE username = ? AND password = ?" for deleteuser

deleteuser, [username, password] for cursor execute

"User " + username + " has been removed" for print

What the function returns

Process for user deletion by using their db login and password as detail, and success message once deleted

1. **Description:** Get the list of all users in the database

Parameters

"Users.db" for sqlite3.connect as db

"SELECT firstname FROM user" for list users

Listusers for cursor.execute

What the function returns

Returns list of usernames after entering user login and their first names

2. **Description:** To create table in Experience.py **Parameters** In cursor.execute: 20 for experienceName VARCHAR 9 for experienceType VARCHAR# Userid: experiencename for PRIMARY KEY, FOREIGN KEY references userTest **What the function returns** Process of table creation if not created, with user details and their experience
Description: to print message prompting user about skills - experience.py **Parameters:** "Welcome! Do you want to create new skill or view existing skills?" for print "1. experience\n",   "2. new experience\n",   "3. drop table\n",   "4. Quit\n" For answer = input Functions returned: allows users to add a new experience information or to view their saved experience
Description: to let users add information about their new experience **Parameters: "Name of experience? \n" for experienceName = input,**

"Evidence for experience? \n" for experienceInfo = input

"What date did you start? (YYYY-MM-DD)\n" for startdate = input

"What date did you leave? (YYYY-MM-DD)\n" for enddate = input

"Job or Educat for experienceType = input ion?\n"

```
"""
  INSERT INTO experienceTest( userid, experiencename, experienceinfo,
    startdate, enddate, experiencetype)
  VALUES('"""+userID+"""','"""+experienceName+"""',
    '"""+experienceInfo+"""','"""+experienceType+"""'
  ,'"""+startdate+"""','"""+enddate+"""')"""
```

^ for cursor.execute

Functions returned: details entered for experience added to experienceTest table

---

Description: to search experience type and information via loop - job_scraper

Parameters: SELECT * FROM experienceTest WHERE userid = ?" for find_experience

find_experience, [userID] for cursor. Execute

Functions returned: results of the type of experience corresponding to searched user

'Listed Experience: '+i[1]+'\nEvidence: '+i[2]+'\nType: '+i[3] for print

Functions returned: name and info of experience if found, error message if not

Description: This function extracts all the desired characteristics of all new job postings

of the title and location specified and returns them in single file.

The arguments it takes are:

- Website: to specify which website to search (options: 'Indeed' or 'CWjobs')

- Job_title

- Location

- Desired_characs: this is a list of the job characteristics of interest,

  from titles, companies, links and date_listed.

- Filename: to specify the filename and format of the output.

  Default is .xls file called 'results.xls'

Parameters

website, job_title, location, desired_characs, filename="results.xls" for deffind_jobs_from

job_title, location for job_soup = load_indeed_jobs_div

job_soup, desired_characs for jobs_list, num_listings = extract_job_information_indeed

location_of_driver, browser='chrome' for driver = initiate_driver job_title, location, driver for job_soup = make_job_search job_soup, desired_characs for jobs_list, num_listings = extract_job_information_cwjobs jobs_list, filename fro save_jobs_to_excel '{} new job postings retrieved from {}. Stored in {}.'.format(num_listings, website, filename) for print Function returned: extracted features of job postings from websites such as Indeed and CWjobs
Description - to import job information to Excel format Parameters - jobs_list, filename for def save_jobs_to_excel jobs _list for jobs = pd.DataFrame Filename for jobs.to_excel Function returned: the functionality for users to import their saved job details to Excel file
Description - for access to external link Indeed.co.uk Parameters - job title, location for load_indeed_jobs_div 'q' : job_title, 'l' : location, 'fromage' : 'last', 'sort' : 'date' for getVars

```
'https://www.indeed.co.uk/jobs?' + urllib.parse.urlencode(getVars) for url

Url for page = requests.get

page.content, "html.parser" for soup = BeautifulSoup

id="resultsCol" job_soup = soup.find

Functions returned - loads url indeed.co.uk
```

Verification and Testing

Evidence that the software is tested with respect to the user requirements.

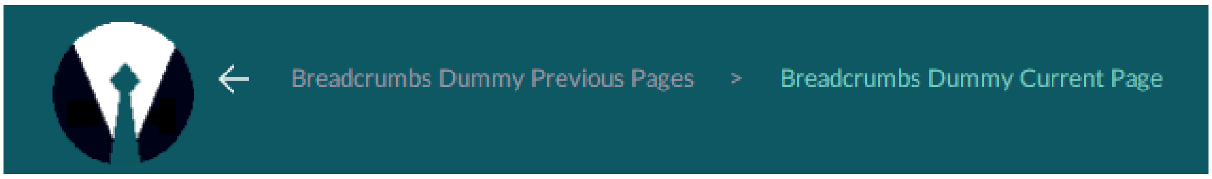
See separate verification and testing document ‘Test Specification’ which contains a series of tests for the key functionalities of the app.

Future Work and Improvements

A critical evaluation of the software and suggestions for its second release.

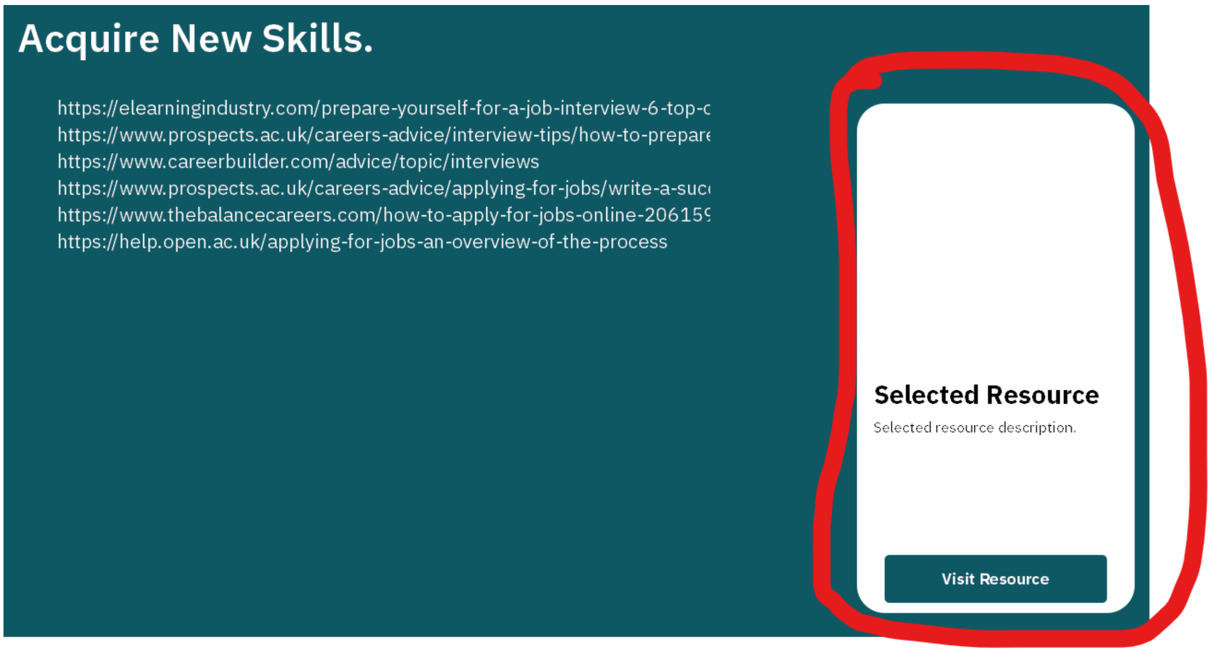
<u>Dropped features</u>

Breadcrumbs


Breadcrumbs Dummy Previous Pages
>
Breadcrumbs Dummy Current Page

Reason: Difficult to implement, quite complex code, not a fundamental or required feature

Detailed resource view


Acquire New Skills.

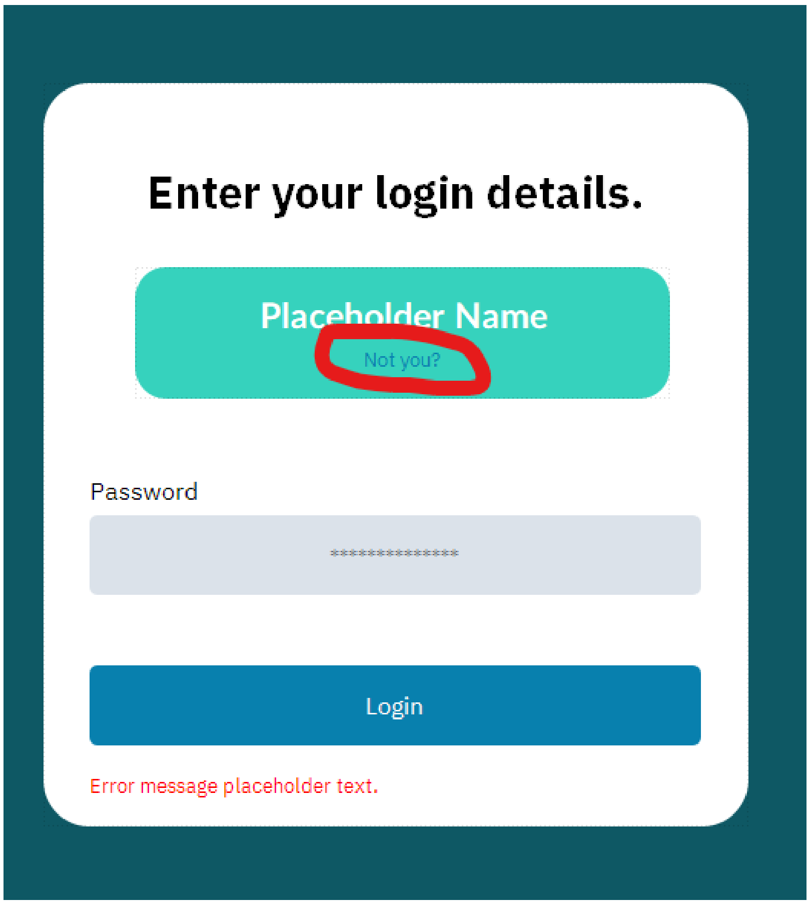
https://elearningindustry.com/prepare-yourself-for-a-job-interview-6-top-c
https://www.prospects.ac.uk/careers-advice/interview-tips/how-to-prepare
https://www.careerbuilder.com/advice/topic/interviews
https://www.prospects.ac.uk/careers-advice/applying-for-jobs/write-a-suc
https://www.thebalancecareers.com/how-to-apply-for-jobs-online-20615
https://help.open.ac.uk/applying-for-jobs-an-overview-of-the-process

Selected Resource

Selected resource description.

The initial UI included a box on the right side of the screen to view a more detailed description of a resource on the left (which can be clicked to select the resource). We decided this was not a fundamental feature because the user could just click on the link itself to visit the resource, and so it was removed.

‘Not you’ buttons



These buttons were removed from the final product because it was felt they were not necessary - the user could press back if they needed to return to the previous user selection screen.

Improvements

Reactive buttons

Buttons currently don't appear obvious as buttons. There is inconsistent indication if they are clickable. Sometimes an indentation appears around the button, but for a lot of buttons this does not appear. An improvement to fix this problem and make buttons more user-friendly, we could make the buttons change colour when hovered over, and change indentation when clicked, and also change the mouse cursor to indicate a button which can be pressed vs the standard mouse cursor (see Figure 6).

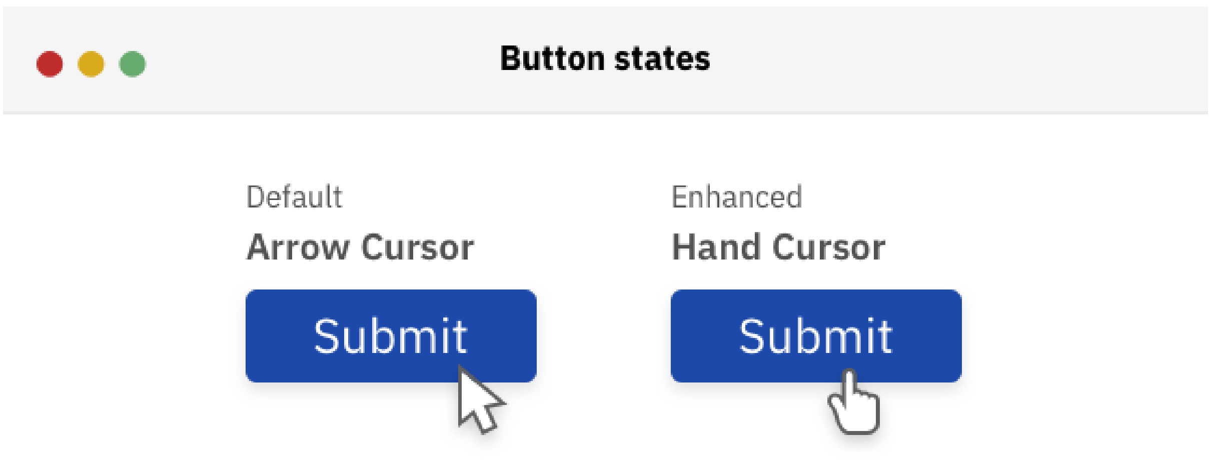


Figure 6

Touch-ups
Future work could focus on touching up small details with the app which didn't relay through from UI creation to the final version of the app. Such as font sizes, menu configuration

Uploading files
A future version could allow an option to upload CVs and cover letters and any other relevant documents (such as .pdf's of job advertisements) so the user can keep track of them in one place. Even further functionality could allow the user to directly edit these within the app itself, rather than opening up any external word processors.

Simpler executable file
Currently the file needs to be run by installing the python dependencies. Future work could add an installation file which installs the required dependencies, and also uses a more user friendly execution file such as .exe for Windows (rather than a .py file).

Refreshing Tables and Dropdowns
Currently when trying to edit newly added entries to the portfolio you can't find them without exiting the program and opening it again. The program needs to be updated so that it refreshes every time a user updates the database.

Proper Validation Techniques used for Database Entry
At this moment in time a lot of the validation techniques have not been implemented. An example of this is that you can have a password that contains only

spaces. In future we should add these as letting users have free reign on what they enter could cause bugs.

Logout Functionality
Currently users can only logout if they close the application entirely. Add a logout button so users can go back to the start screen.

Other brief mentions

- Improved algorithms for relevant job updates and avoid more redundant updates
- Updates on advice and tips when the rejection rate is too high
- Job updates based on user’s workplace preference such as high ratings, elocations type, etc
- Keywords to include similar words and phrases, eg “IT” and “computing”, “distant” and “remote”
- Filter options such as by reputed employers and workplace