

**NANYANG
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SINGAPORE

SC2006 – Software Engineering

Lab 1: Requirements Elicitation

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Problem Statement

Employees and job seekers face uncertainty as they lack a unified platform to assess career risks and plan for ever evolving job market trends. With rapid technological advancement and economic shifts, many are uncertain about their job security and faced with the challenge of identifying skills in need of development. Existing resources are fragmented across multiple websites and do not provide personalised, real-time risk assessment.

Our solution is to develop NextStep, a web app that analyses job market trends, predicts career risks, and provide personalised recommendations for skills development and career transitions. Through integrating data from various sources including government, we aim to provide users with relevant SkillsFuture courses and possible career opportunities.

Functional Requirements

User registration and authentication

1. A user shall be able to register themselves with NextStep to begin personalising their experience
 - 1.1. The user shall be made known its terms and conditions of registering with NextStep such as:
 - 1.1.1. For privacy concerns
 - 1.1.2. Recommended use of NextStep
 - 1.1.3. Disclaimers about NextStep
 - 1.2. The user shall be able to key in their information such as:
 - 1.2.1. Name
 - 1.2.2. Email
 - 1.2.3. Password
 - 1.2.4. Current industry
 - 1.2.5. Current job role
 - 1.2.6. Current education level
 - 1.2.7. Years of experience
 - 1.2.8. Key skills
 - 1.2.9. Top 5 interested industries
 - 1.3. The registration page shall verify the user's authenticity and validate all input fields
 - 1.3.1. Should the input fields be invalid, the user will be made known about it and further tasked to correct the fields. The form will not be submitted
 - 1.4. NextStep shall store the user's information in a secure database upon user's successful registration

- 1.5. The user shall be considered a registered user once their profile has been verified by NextStep
2. A registered user shall be able to log in to NextStep
 - 2.1. NextStep shall be able to verify the credentials of a user before allowing the user to access logged in features
 - 2.2. The registered user shall be able to log out at any time
3. NextStep shall allow users to update their user profile
 - 3.1. Add / Remove skills
 - 3.2. Update professional details

Personalised careers and skills analysis

4. NextStep shall allow users to seek insights on their career risk
 - 4.1. The insights should be based on an industry and role that the user picks.
 - 4.2. For registered users who have logged in, NextStep should:
 - 4.2.1. Calculate and display personal job risk score
 - 4.2.2. Show industry-specific trends
 - 4.2.3. Present relevant economic indicators
 - 4.2.4. Provide early warning notifications
 - 4.2.5. Display skill gap analysis
5. NextStep shall allow users to seek insights on industry trends
 - 5.1. NextStep shall display a score for the job market stability index for the industry and roles associated
 - 5.2. NextStep shall display the typical positions in a particular industry and their associated pay range
 - 5.3. NextStep shall display a time-series graph relating to the demand and supply
 - 5.3.1. The graph shall be adjustable to reflect time periods between 1, 2, 5, and 10 year trends
 - 5.3.2. The graph shall contain tool tips to allow users to view more details about each period
6. NextStep shall recommend personalised learning pathways to achieve the skills relevant to an industry that the user is interested in
 - 6.1. NextStep should display relevant SkillsFuture courses or other ways of getting official accreditation in the particular skill
7. NextStep shall recommend personalised career pathways according to the users' existing skills, interest, or past experiences by:
 - 7.1. Suggesting alternative career paths
 - 7.2. Match users with mentorship opportunities
 - 7.3. Provide salary and demand forecasts
 - 7.4. Link to relevant job postings.

Enhancing user experience with AI chatbots

8. NextStep shall allow users to interact with NextStep AI, an Artificial Intelligent (AI) chatbot that answers questions

- 8.1. NextStep AI shall answer queries on NextStep itself such as:
 - 8.1.1. Website layout
 - 8.1.2. How NextStep should be used
 - 8.1.3. How credible is NextStep
- 8.2. NextStep AI shall answer queries relating to the job industry like the positions and the respective roles and responsibilities
- 8.3. NextStep AI shall have safeguards to prevent misuse such as:
 - 8.3.1. NextStep AI shall not answer queries outside of its scope of responsibilities. For example it should not be able to answer math questions if asked.
 - 8.3.2. NextStep AI shall prevent any additional queries if the user has asked more than 20 queries. It shall flag the user as spam and set a cooldown for 24 hours before the user can ask it any more questions

Non-functional Requirements

Usability

1. The NextStep website should have a simple and intuitive user interface
 - 1.1. Users should be able to comfortably find the information they need within 2 minutes of entering the site
2. The NextStep website should be mobile responsive
 - 2.1. Users should be able to see 100% of the page content with at most 20% of redundant information (like navigation tabs) hidden for a more pleasant user experience
 - 2.2. The website should remain usable regardless if it is viewed on a PC, laptop, mobile tablet or mobile phone
3. The AI chatbot should provide clear, concise and relevant responses

Reliability

1. Upon page reload, every page of the NextStep website should be viewable within 5s on a Chrome browser using a standard 2.4G WiFi connection on a mid-tier laptop or an equivalent
2. The system must ensure data integrity, preventing data corruption or loss
3. Can handle simultaneous user access without crashes or inconsistencies
4. Login and authentication must be robust and ensure no unauthorized access

Performance

1. The risk assessment calculation should complete within 10 seconds of submission.
2. The real-time job market data should update every day.
3. System should process login within 2 seconds and validate credentials quickly
4. AI chatbot should provide responses within 2 seconds to maintain a smooth user experience
5. System should be able to handle up to 10000 concurrent users without performance degradation

Supportability

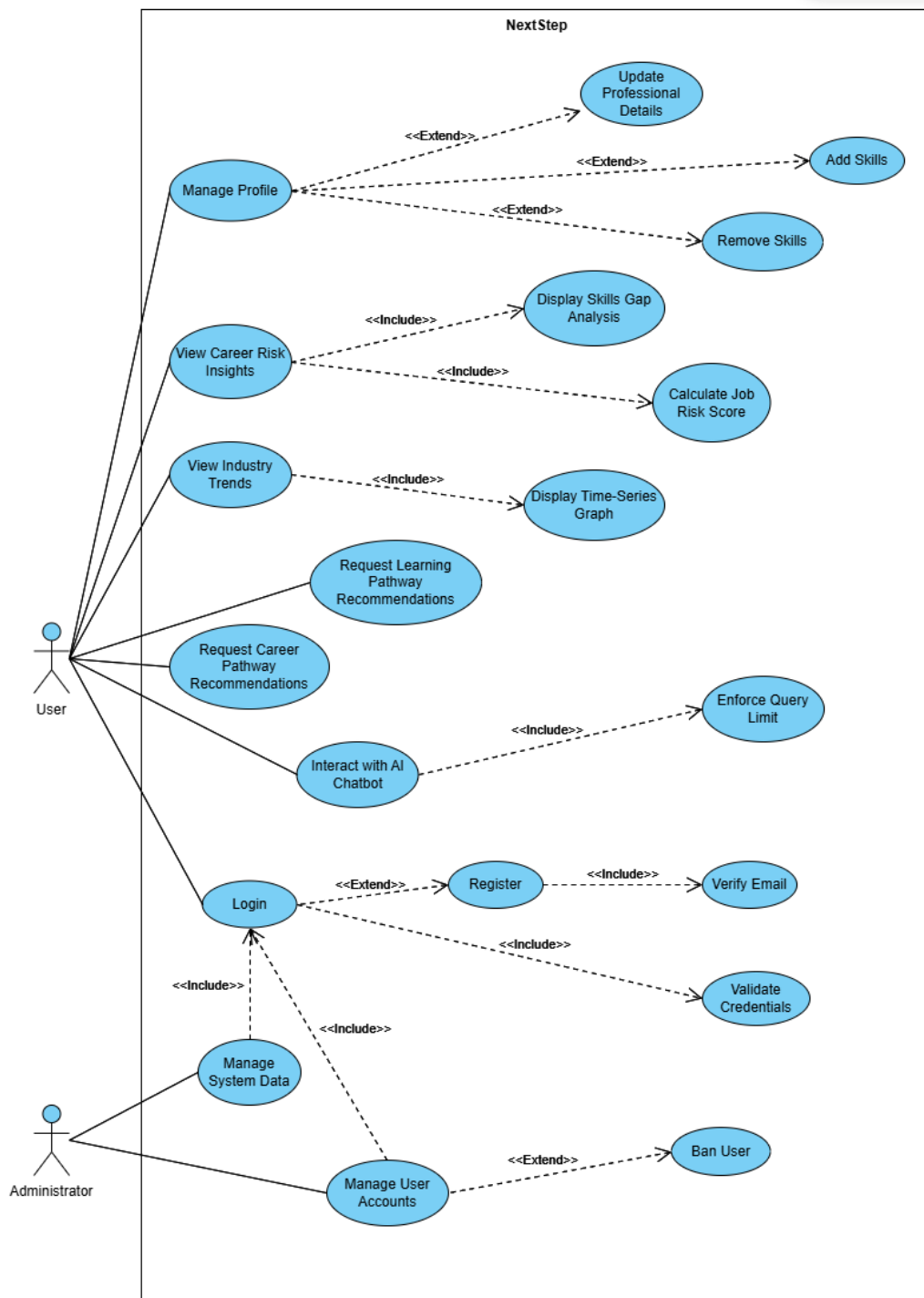
1. System should support automated updates without disrupting active users
2. System allow administrators to manage user accounts effectively, including banning users when necessary
3. The system must be deployable on any cloud infrastructure with minimal configuration changes, ensuring portability and scalability

Data dictionary

Term	Definition
NextStep	The name of the web application. Can refer to the name of the system itself too
NextStep AI	The name of the AI chatbot within NextStep that answers queries relating to NextStep or career search
Job seeker	An arbitrary person who is looking for a job. They may or may not be employed at the moment
Employee	An arbitrary person who is still employed at their job
User	Both employees and job seekers who are using NextStep
Registered user	A user who has registered themselves with NextStep
Industry	The industry in which the user is currently employed or wants to be employed in. It helps the system tailor insights and recommendations based on the trends and risks of that specific sector
SkillsFuture Courses	Specific courses offered by SkillsFuture that help the user develop the necessary skills for career advancement
Career Pathways	Structured routes that individuals can follow to achieve their career goals. It can comprise of career transitions, expansions or advancement opportunities.
Mentors	An arbitrary person who is available to help and guide the user towards career development or transition
Role	The specific job role within the selected industry for which the user seeks career risk insights
Salary	An estimate of potential salaries for a user's chosen career path, reflecting industry standards and provides users with a realistic expectation of what they can earn
User Query	A record of the user's interactions with the AI chatbot, which may include questions about the platform, career advice, or industry information

Initial Use Case Model

Use Case diagram



Use Case descriptions

1.1 Account Registration

Use Case ID:	UC-01-1		
Use Case Name:	AccountRegistration		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to register an account on NextStep
Preconditions:	1. User has a valid and unique email address
Postconditions:	1. New user account is created and stored in database. 2. A verification email is sent to provided email address.
Priority:	High
Frequency of Use:	High
Flow of Events:	1. The user navigates to registration page. 2. The user enters their full name, email, password, current industry, current job role, current education level, years of experience, key skills, and top 5 interested industries. 3. The system checks email uniqueness using the use case CheckEmail. 4. The user reviews and accepts the terms, conditions, privacy concerns and disclaimers. 5. The user clicks the "Create Account" button. 6. The system creates an account for the user and stores their data in a secure database.
Alternative Flows:	AF-S3: If the email provided is already in use 1. The system displays "Email already in use. Please enter another email!" 2. The system returns to step 2.
Exceptions:	User is notified if verification email is unable to be sent.
Includes:	1. CheckEmail
Special Requirements:	1. Must adhere to terms and conditions. 2. All data must be encrypted.
Assumptions:	The user has entered accurate data.
Notes and Issues:	None

1.2 Login

Use Case ID:	UC-01-2		
Use Case Name:	Login		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User, Administrator
Description:	Allow users or administrators to log in to their NextStep account using their email and password
Preconditions:	1. The user/administrator must have a registered account
Postconditions:	1. The user/administrator is navigated to their dashboard on the home page.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user/administrator navigates to the login page. 2. The user enters their email and password. 3. The user/administrator clicks the "Login" button. 4. The system uses the use case "ValidateCredentials" to check the credentials provided against the database. 5. If the credentials are verified, the user/administrator is redirected to their dashboard on the home page.
Alternative Flows:	AF-S5: If credential validation fails <ol style="list-style-type: none"> 1. The system returns to login page.
Exceptions:	If any information is missing, an error message is displayed.
Includes:	1. ValidateCredentials
Special Requirements:	The password entered must be encrypted.
Assumptions:	User/Administrator has an existing and active NextStep account.
Notes and Issues:	Could include mechanism to retrieve password

1.3 Check Email

Use Case ID:	UC-01-3		
Use Case Name:	CheckEmail		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Check the uniqueness of the email provided.
Preconditions:	None
Postconditions:	1. The uniqueness of the email provided is determined.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user enters an email address. 2. The system checks the email provided against the database. 3. If there is no matching email in the database, the email provided is deemed to be unique.
Alternative Flows:	AF-S3: If there is a match in the database <ol style="list-style-type: none"> 1. The system displays "Email already in use!" 2. The system returns to step 1.
Exceptions:	None
Includes:	None
Special Requirements:	1. All data must be encrypted.
Assumptions:	The user has entered a valid and registered email address.
Notes and Issues:	None

1.4 Validate Credentials

Use Case ID:	UC-01-4		
Use Case Name:	ValidateCredentials		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Verifies whether the email and password provided match the database
Preconditions:	None
Postconditions:	<ol style="list-style-type: none"> 1. The system successfully determines whether the email and password provided match the database.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user inputs their email and password. 2. The system checks whether the password provided matches the password stored for the email provided. 3. If the email-password pair match, the inputs are successfully validated.
Alternative Flows:	AF-S3: If the email-password pair do not match <ol style="list-style-type: none"> 1. The system displays "Email and password do not match!" 2. The system returns to step 1.
Exceptions:	None
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. All data, especially the password must be encrypted.
Assumptions:	The user has entered an email address linked to an active NextStep account.
Notes and Issues:	None

2.1 Manage Profile

Use Case ID:	UC-02-1		
Use Case Name:	ManageProfile		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to select information to update on their profile.
Preconditions:	1. The user must be logged in.
Postconditions:	None
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user navigates to the Profile page. 2. The user clicks the "Update Profile" button. 3. The system prompts the user to select action: UPDATE PROFESSIONAL DETAILS, ADD SKILLS, or REMOVE SKILLS. 4. If the user selects UPDATE PROFESSIONAL DETAILS, they use the use case UpdateProfessionalDetails to update their professional details. 5. If the user selects ADD SKILLS, they use the use case AddSkills to add key skills to their profile. 6. If the user selects REMOVE SKILLS, they use the use case RemoveSkills to remove key skills from their profile.
Alternative Flows:	AF-S3: If none of the activities are selected <ol style="list-style-type: none"> 1. The system returns to the Profile page.
Exceptions:	None
Includes:	<ol style="list-style-type: none"> 1. UpdateProfessionalDetails 2. AddSkills 3. RemoveSkills
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

2.2 Update Professional Details

Use Case ID:	UC-02-2		
Use Case Name:	UpdateProfessionalDetails		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to update professional details.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user selected the action UPDATE PROFESSIONAL DETAILS on the Profile page
Postconditions:	<ol style="list-style-type: none"> 1. The user profile is updated with the latest professional details provided and saved.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user updates their professional information, such as current industry, current job role and years of experience. 2. The user clicks the "Save" button. 3. If there is no missing information, the system saves the updated professional details to the database.
Alternative Flows:	AF-S3: If there are missing or invalid inputs <ol style="list-style-type: none"> 1. The system highlights problematic fields and displays an error message. 2. The system returns to step 1.
Exceptions:	If there is a database error, an error message is displayed and changes are not saved.
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. All updates must be encrypted and saved securely. 2. All changes should be reflected immediately upon saving.
Assumptions:	The user has entered accurate data.
Notes and Issues:	None

2.3 Add Skills

Use Case ID:	UC-02-3		
Use Case Name:	AddSkills		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to add key skills to their profile
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user selected the action ADD SKILLS on the Profile page.
Postconditions:	<ol style="list-style-type: none"> 1. The user profile must be updated with the latest list of all key skills and saved.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user adds a key skill by typing or selecting from a dropdown list. 2. The user clicks the "Save" button. 3. If there is no missing information, the system saves the skill added to the database.
Alternative Flows:	AF-S3: If there are missing or invalid inputs <ol style="list-style-type: none"> 1. The system displays an error message. 2. The system returns to step 1.
Exceptions:	If there is a database error, an error message is displayed and changes are not saved.
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. All updates must be encrypted and saved securely. 2. All changes should be reflected immediately upon saving.
Assumptions:	The user has provided accurate data.
Notes and Issues:	None

2.4 Remove Skills

Use Case ID:	UC-02-4		
Use Case Name:	RemoveSkills		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to remove key skills from their profile
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user selected the action REMOVE SKILLS from the Profile page.
Postconditions:	<ol style="list-style-type: none"> 1. The user profile must be updated with the latest list of all key skills and saved.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user chooses a key skill to remove. 2. The system prompts the user to confirm their decision. 3. If the user confirms the decision, the system removes the key skill from their profile and saves the change.
Alternative Flows:	AF-S3: If the user cancels the decision <ol style="list-style-type: none"> 1. The system returns to step 1.
Exceptions:	If there is a database error, an error message is displayed and changes are not saved.
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. All updates must be encrypted and saved securely. 2. All changes should be reflected immediately upon saving.
Assumptions:	The user's decision is based on accurate information.
Notes and Issues:	None

3.1 View Career Risk Insights

Use Case ID:	UC-03-1		
Use Case Name:	ViewCareerRiskInsights		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to view insights about certain careers and industries via a personalized dashboard.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user profile must be complete.
Postconditions:	<ol style="list-style-type: none"> 1. The user received a comprehensive risk assessment overview for the selected career and industry
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user navigates to the dashboard on the home page. 2. The user selects an industry and job role for analysis. 3. The system calculates the job risk score using the use case CalculateJobRiskScore. 4. The system displays skills gap analysis using the use case DisplaySkillsGapAnalysis on the dashboard. 5. The system displays typical positions in the selected industry and their associated pay range.
Alternative Flows:	AF-S2: If no industry or job role selected <ol style="list-style-type: none"> 1. The system refers by default to the user's profile information for analysis. 2. The system continues to step 3.
Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data.
Includes:	<ol style="list-style-type: none"> 1. DisplaySkillsGapAnalysis 2. CalculateJobRiskScore

Special Requirements:	<ol style="list-style-type: none"> 1. Dashboard must load quickly and be accessible on multiple devices. 2. All information must be displayed clearly in an orderly manner.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

3.2 Display Skills Gap Analysis

Use Case ID:	UC-03-2		
Use Case Name:	DisplaySkillsGapAnalysis		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Displays a complete analysis of the skill gap for the selected industry and job role
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user profile must be complete.
Postconditions:	<ol style="list-style-type: none"> 1. The user's dashboard displays a complete skills gap analysis based on the selected industry and job role.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system identifies the desirable and required skills for the selected industry and job role. 2. The system displays the skills found and provides detailed explanations.
Alternative Flows:	<p>AF-S1: If no industry or job role selected</p> <ol style="list-style-type: none"> 1. The system refers to the user's current industry and job role for analysis. 2. The system identifies the desirable and required skills for that industry and job role. 3. The system identifies the user's skills from their profile. 4. The system displays the skills the user does not have and provides detailed explanations.
Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data.
Includes:	None

Special Requirements:	<ol style="list-style-type: none"> 1. Analysis must be presented clearly, highlighting the most important skills. 2. Explanations provided must be clear and concise.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

3.3 Calculate Job Risk Score

Use Case ID:	UC-03-3		
Use Case Name:	CalculateJobRiskScore		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Calculates and displays the job market stability index for the selected industry and job role
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user profile must be complete.
Postconditions:	<ol style="list-style-type: none"> 1. The user's dashboard displays a calculated risk assessment score for the selected industry and job role.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system calculates the risk score for the selected industry or job role using a mathematical model. 2. The system displays the job risk score and provides detailed explanations.
Alternative Flows:	AF-S1: If no industry or job role selected <ol style="list-style-type: none"> 1. The system refers to the user's current industry and job role for analysis. 2. The system continues to step 2.
Exceptions:	If the calculation fails, an error message is displayed and the user is prompted to try again.
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. Job risk score is presented with a colour scale. 2. Explanations provided must be clear and concise.

Assumptions:	<ol style="list-style-type: none"> 1. The data used for analysis is reliable and up to date. 2. There are no errors in the calculations.
Notes and Issues:	Final score may have to be adjusted to be reflective of reality.

4.1 View Industry Trends

Use Case ID:	UC-04-1		
Use Case Name:	ViewIndustryTrends		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to view industry trends on dashboard
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in.
Postconditions:	<ol style="list-style-type: none"> 1. The user's dashboard displays all information regarding industry trends based on selected industries
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user navigates to the dashboard on the home page. 2. The user selects an industry for analysis. 3. The system displays industry trends by using the use case DisplayTimeSeriesGraph based on selected industries. 4. The system displays relevant economic indicators related to that industry and provides explanations.
Alternative Flows:	<p>AF-S2: If no industry or job role selected</p> <ol style="list-style-type: none"> 1. The system refers by default to the user's profile information for analysis. 2. The system continues to step 3.

Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data.
Includes:	1. DisplayTimeSeriesGraph
Special Requirements:	<ol style="list-style-type: none"> 1. Dashboard must load quickly and be accessible on multiple devices. 2. All data and information must be displayed clearly. 3. Explanations provided must be clear and concise.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

4.2 Display Time-Series Graph

Use Case ID:	UC-04-2		
Use Case Name:	DisplayTimeSeriesGraph		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Displays time-series graphs based on the current trends of the selected industry.
Preconditions:	1. The user must be logged in.
Postconditions:	1. The user's dashboard displays complete time-series graphs for the selected industry.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The system searches for data on the current trends of the selected industry. 2. The system compiles and analyses the data found. 3. The system plots and displays time-series graphs for the trends of the selected industry.
Alternative Flows:	AF-S1: If no industry is selected <ol style="list-style-type: none"> 1. The system searches for data on the current trends of the user's current industry. 2. The system continues to step 2.

Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data and graphs are not displayed.
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. Time-series graphs and all relevant information must be presented clearly. 2. The size of the time-series graphs must fit to screen.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

5.1 Request Learning Pathway Recommendations

Use Case ID:	UC-05-1		
Use Case Name:	RequestLearningPathwayRecommendations		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to receive recommendations on learning pathways for upskilling.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in.
Postconditions:	<ol style="list-style-type: none"> 1. A list of recommended courses is displayed based on the user's targets.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user navigates to the Learning Recommendations page. 2. The user inputs a skill to learn. 3. The system displays relevant courses and ways to obtain official accreditation for the provided skill.
Alternative Flows:	AF-S2: The user inputs an industry of interest

	1. The system displays relevant courses related to that industry.
Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. The courses are presented as a list and ordered based on relevance. 2. Links to the courses are provided for each recommendation.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

6.1 Request Career Pathway Recommendations

Use Case ID:	UC-06-1		
Use Case Name:	RequestCareerPathwayRecommendations		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to receive personalized career pathway recommendations
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The user profile must be complete.
Postconditions:	1. A personalized career pathway recommendation is displayed according to users' existing skills, interests and past experiences.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user navigates to the Career Recommendations page. 2. The user inputs an industry or job role of interest.

	<ol style="list-style-type: none"> 3. The system provides salary and demand forecasts based on user input. 4. The system suggests a career pathway to build towards the user's goal. 5. The system matches users with relevant mentorship opportunities, if any.
Alternative Flows:	None
Exceptions:	If external data sources are unavailable, the dashboard displays a notice indicating incomplete data
Includes:	None
Special Requirements:	<ol style="list-style-type: none"> 1. All information and data are presented clearly. 2. Suggested career pathways must be reasonable and relevant. 3. Links to relevant job postings are also posted.
Assumptions:	The data used for analysis is reliable and up to date.
Notes and Issues:	None

7.1 Interact with AI Chatbot

Use Case ID:	UC-07-1		
Use Case Name:	InteractWithAiChatbot		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	User
Description:	Allows users to interact with the NextStep AI Chatbot to ask questions related to platform usage or industry-specific queries.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. The chatbot service must be active and accessible.
Postconditions:	<ol style="list-style-type: none"> 1. The user receives appropriate answers to their queries. 2. If query limit is exceeded, the system flags the user and imposes a cooldown
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user clicks on the AI Chatbot widget.

	<ol style="list-style-type: none"> The user submits a question. The query is processed and an answer is returned within the defined scope. The system tracks the number of queries made by user. If query count is exceeded, the system flags the user and imposes a cooldown.
Alternative Flows:	AF-S3: If the query is beyond the defined scope <ol style="list-style-type: none"> A predefined response would be returned, indicating the chatbot cannot answer the question. The system returns to step 2.
Exceptions:	If there is a system error, the chatbot displays an error message and does not answer questions.
Includes:	1. EnforceQueryLimit
Special Requirements:	<ol style="list-style-type: none"> The chatbot must have safeguards to prevent misuse. The responses should be accurately provided within 5 seconds
Assumptions:	The AI Chatbot is trained on relevant content about NextStep and the current job industries.
Notes and Issues:	None

7.2 Enforce Query Limit

Use Case ID:	UC-07-2		
Use Case Name:	EnforceQueryLimit		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	System
Description:	Enforces a limit to the number of queries that can be submitted to the chatbot within a certain time frame
Preconditions:	1. The Administrator must be logged in.
Postconditions:	1. The system flags the user if the query limit is reached.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	1. The system sets a query limit.

	2. When the chatbot is used, if the query limit is reached, the system flags the user and a cooldown is imposed.
Alternative Flows:	None
Exceptions:	None
Includes:	None
Special Requirements:	None
Assumptions:	The query limit set has a reasonable value.
Notes and Issues:	None

8.1 Manage System Data

Use Case ID:	UC-08-1		
Use Case Name:	ManageSystemData		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	Administrator
Description:	Allows administrators to manage system data, including updating, adding and deleting data used by NextStep.
Preconditions:	1. The Administrator must be logged in.
Postconditions:	1. The system data is updated and is immediately reflected in the NextStep functionalities. 2. All changes are recorded.
Priority:	High

Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The administrator navigates to Manage System Data section. 2. The system displays system data from various modules. 3. The administrator selects the appropriate module and performs required modifications. 4. The system validates the new data and updates to the live system. 5. The system records all changes.
Alternative Flows:	<p>AF-S4: Error in data format</p> <ol style="list-style-type: none"> 1. The system prompts the administrator to correct the data format. 2. The system returns to step 3. <p>AF-S4: Update process fails</p> <ol style="list-style-type: none"> 1. The system notifies the administrator of the failure. 2. The system reverts to the previous data state. 3. The system returns to step 2.
Exceptions:	If unauthorized changes are detected, the system aborts the update and alerts the administrator.
Includes:	<ol style="list-style-type: none"> 1. Login
Special Requirements:	There should be proper backup mechanisms in place.
Assumptions:	The administrator understands the implications of modifying system data.
Notes and Issues:	None

8.2 Manage User Accounts

Use Case ID:	UC-08-2		
Use Case Name:	ManageUserAccounts		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	Administrator
Description:	Allows administrators to manage and perform actions on user accounts
Preconditions:	1. The Administrator must be logged in.
Postconditions:	1. All actions are recorded.
Priority:	Medium
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The administrator navigates to Manage User Accounts section. 2. The system displays a list of registered user accounts. 3. The administrator selects an account to view account information. 4. The administrator can perform actions on user accounts. 5. The system validates and saves changes to database. 6. The system records all changes.
Alternative Flows:	AF-S3: User account not found <ol style="list-style-type: none"> 1. The system displays "Account not found!" 2. The system returns to step 2.
Exceptions:	If unauthorized changes are detected, the user account is not changed and the administrator is alerted.
Includes:	1. Login
Special Requirements:	Sensitive information, such as user email and password remain encrypted and not visible to the administrator.
Assumptions:	Proper backup mechanisms are in place.
Notes and Issues:	None

8.3 Ban User

Use Case ID:	UC-08-3		
Use Case Name:	Ban User		
Created By:	Goh Jun Keat	Last Updated By:	Goh Jun Keat
Date Created:	4/2/2025	Date Last Updated:	4/2/2025

Actor:	Administrator
Description:	Allows administrators to ban user accounts.
Preconditions:	1. The Administrator must be logged in.
Postconditions:	1. All actions are recorded.
Priority:	Low
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The administrator selects a user account to ban. 2. The system prompts the administrator for confirmation. 3. After confirmation, the system suspends the account and disables user login for the account. 4. The system validates, saves and records all actions and changes.
Alternative Flows:	<p>AF-S1: User account not found</p> <ol style="list-style-type: none"> 1. The system displays "Account not found!" 2. The system returns to step 1. <p>AF-S3: Administrator cancels action</p> <ol style="list-style-type: none"> 1. The system returns to step 1.
Exceptions:	If unauthorized changes are detected, the user account is not banned and the administrator is alerted.
Includes:	None
Special Requirements:	None
Assumptions:	There are appropriate reasons why the account should be banned.
Notes and Issues:	None

UI Mockups

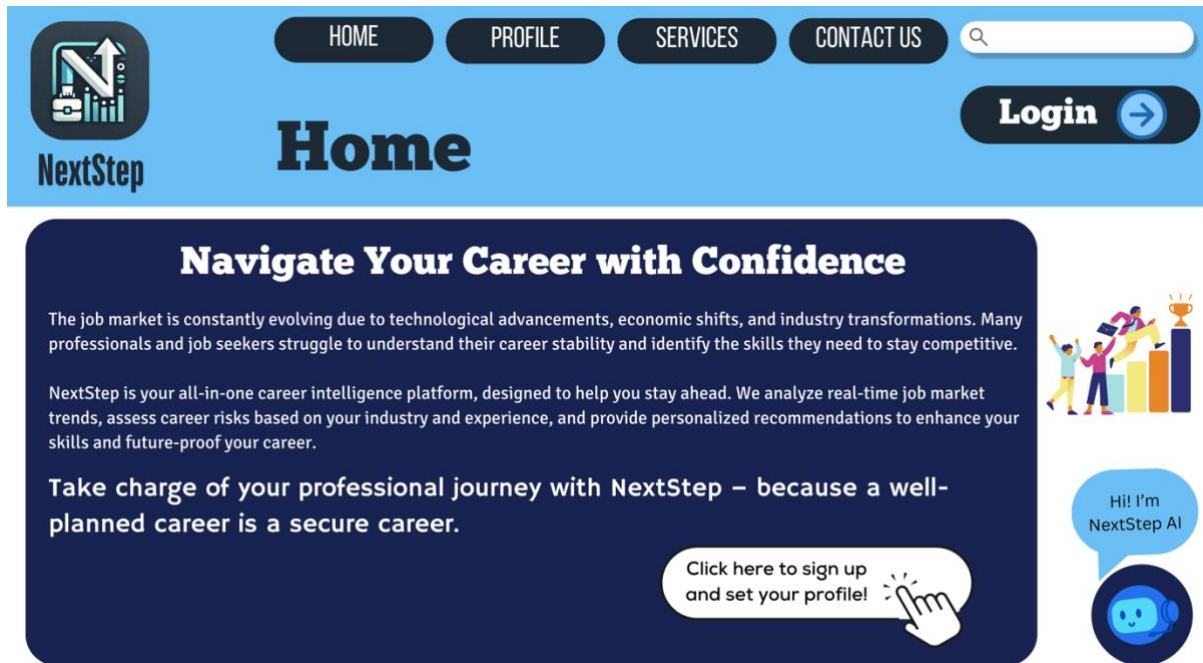


Figure 1: Home Page



Figure 2: Sign Up Page



Figure 3: Login Page

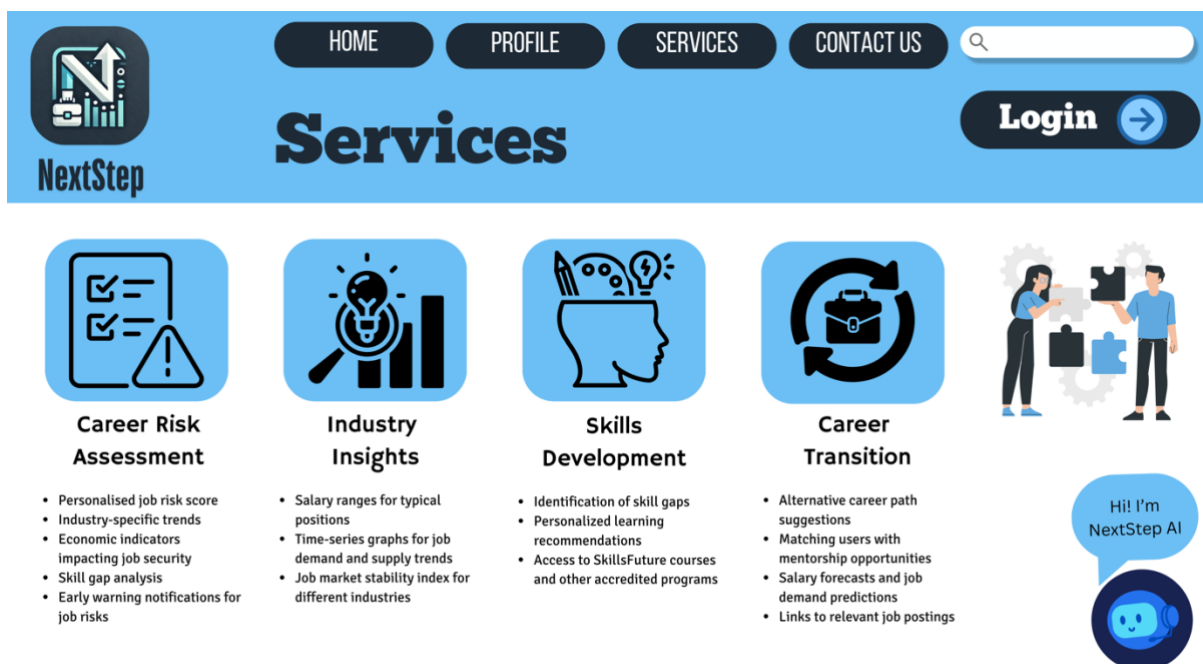




Figure 4: Services Page


NextStep

HOMEPROFILESERVICESCONTACT US

Update Profile


John Doe
johndoe@email.com
Software Engineer


Education: Bachelor's in Computer Science
Years of Experience: 5 years
Current Industry: Technology
Skills:
JavaPythonHTML
Cloud ComputingMachine Learning

Work Experience:
Software Engineer
XYZ Tech Solutions | Jan 2020 – Present

- Developed and maintained scalable web applications using Java and React.
- Optimized database queries, reducing API response time by 40%.
- Conducted code reviews and mentored junior developers.

Junior Software Developer
ABC Innovations | Jul 2018 – Dec 2019

- Assisted in developing mobile applications using Flutter and Firebase.
- Collaborated with UX/UI designers to enhance application usability.



Top 5 Interested Industries :
AI & Machine LearningCybersecurity
FintechCloud ComputingBlockchain

Resume, Cover Letter, Linkedin
Resume: [John Doe Resume.pdf](#)
Cover Letter: [John Doe Cover Letter.pdf](#)
Linkedin: <https://www.linkedin.com/in/johndoe/>
[Change Password](#) [Delete Account](#)

Hi! I'm NextStep AI




Figure 5: Profile