The Problem

Today's text-based social media space is dominated by large corporations such as 𝕏 and Meta who's platforms thrive off controversy and are meticulously designed to elicit strong negative emotional responses from their users in order to drive engagement. Their algorithms spit out contentious posts and favour the accounts that can stir up the masses.

Controversial content on these platforms tends to receive more visibility and engagement, creating an environment where divisive and polarising opinions are disproportionately amplified. This not only contributes to an increasingly toxic online discourse but also fosters an atmosphere where users are constantly exposed to emotionally charged content, potentially impacting their mental and emotional well-being.

This approach to social media has caused a detriment to individuals' health and wellbeing, with the rise of social media over the past two decades coincidentally corresponding to record levels of anxiety and depression. In the three years between 2012 and 2015 alone, depression in boys increased by 21% and in girls by 50%. It has been found that the risk of depression increased by 13% for each hour increase in social media use in adolescents.

Given the evident correlation between the current approach to social media and adverse mental health outcomes, there is an urgent need for alternative platforms.

The Solution

My Major Project is a social media alternative that responds to this issue. Glowup is a social media site with an algorithm that favours positive and encouraging content. It includes resources and information for promoting health and wellbeing as well as incentives for users to carry out acts of kindness and gratitude in their daily lives. It will be an escape for individuals who are sick and tired of being slaves to the algorithm and wish to use social media in a more productive and mindful way.

As such, the target demographic for my application is individuals within the 15-30 year old range of an English speaking background. This demographic represents a crucial age group that is highly engaged with digital platforms, particularly social media. The choice of an English-speaking background ensures that the platform caters to a broad audience, fostering inclusivity and cultural diversity within its user base whilst also taking into account the relatively short development time and team size.

There are a number of key functionalities which all visitors to the site will be able to use. Users will be able to create and share posts, follow other accounts and interact with other users through comments on posts and direct messaging. These features are inherent to today's social media platforms and go a long way in connecting individuals with each other.

Beyond being a social space, Glowup goes further by providing resources and information aimed at promoting health and well-being. This includes features that encourage users to adopt healthier lifestyle choices, fostering a positive impact on both their physical and mental well-being. By integrating wellness-related content, Glowup positions itself as a platform that not only connects people socially but also contributes to their personal growth and overall happiness.

Glowup incorporates a unique aspect by also offering incentives for users to perform acts of kindness and express gratitude in their daily lives. This feature not only differentiates the platform but also actively encourages a culture of positivity both online and offline. Users are rewarded for spreading kindness, creating a virtuous cycle where positive actions are celebrated and reinforced.

This site will need to meet a number of design specifications such that it can suit the client's needs. These criteria include:

Experience
Glowup should provide an enjoyable and engaging experience to the user. The website must be well thought out, skillfully implemented and filled with useful features. It must be a complete experience that includes all aspects of a successful social media site, such as posts, following and direct messages.

Language

As this social media platform aims to spread love and positivity, all text inputted by users must be screened for offensive or inappropriate content before being published. This proactive approach ensures that the platform fosters a culture of respect and support. By filtering out harmful content, Glowup can create a space where users feel safe and can focus on spreading love and positivity.

Design

Fonts must be readable and sized such that individuals can read the text without any issues. Any multimedia, such as profile images, must retain their quality and be displayed at a size that can be easily viewed by the users. Glowup will have a clear, well-thought-out design meaning that the general population will be able to use it without any advanced technical knowledge. Whilst the target demographic is individuals aged between 15-30 years old, Glowup should be able to be used by people of all ages.

Accessibility

Glowup should be able to be accessed across a wide range of devices. It should consistently work across all modern browsers, displaying correctly on phones, computers and tablets. The platform should be optimized to function effectively even on lower-end devices, ensuring that users with diverse technological capabilities can access and enjoy the site without any constraints.

Performance

Users should experience a fast and responsive platform, regardless of the device or browser they are using. This includes quick loading times for content, smooth navigation, and efficient data processing. A well-performing site enhances user satisfaction and encourages continued engagement, contributing to the overall success of the Glowup platform. As such, metrics such as a Largest Contentful Paint of under 2.5 seconds will be strongly adhered to on this platform.

System Specifications

There are a number of system functions that this program will include and in order for them to function as planned, associated methods will be produced. These functionalities, and how they link to the specifications of the problem, include:

Accounts - to facilitate self-expression:
- Sign up to Glowup → signUp
- Sign in to Glowup → signIn
- Edit Bio - editBio, saveBio
- Log out of the website→ logout

Interactions - to connect with others:
- Create a post → createPost, validatePost, publishPost
- Explore posts in feed → fetchPosts, displayPosts
- View accounts → fetchUserData, displayUserData
- Follow users → followUser
- Direct message users → sendMessage, validateText, receiveMessage
- Comment on posts → validateText, sendComment
- Like posts → likePost

Wellbeing - to promote mental health:
- View app timer → appTimer
- Daily kindness/gratitude challenges → generateChallenge, completeChallenge

Hardware specifications:
As mentioned above, this social media platform will be developed as a website. As such the hardware specifications are very minimal. Devices will need to have a modern browser installed. A minimum of 2GB of RAM will be needed to browse the site and any processor made in the last 10 years should be able to handle it without issues. The website will therefore be able to work on virtually all laptops, smartphones and tablets updated since the last major update to HTML5 and the W3C recommendation was released in 2014. Furthermore, as Glowup's data is stored in the cloud, devices must have a stable internet connection with at least 10mbps to use the site.

A recommended device specification on the **MacOS** system is as follows:
Processor: 3.2 GHz Apple M1 Chip
RAM: 8GB
Operating System: MacOS Sonoma 14.0
Graphics: Integrated 8-core GPU with 2.6 teraflops of throughput

A recommended device specification on the **Windows System** is as follows:
Processor: 1 gigahertz (GHz) processor
RAM: 8GB
Operating System: Windows 11
Graphics: DirectX 9 with WDDM 1.0 driver

A recommended device specification on the **iOS** system is as follows:
Processor: 3.2 GHz Apple A17 Bionic Chip
RAM: 3GB
Operating System: iOS 17
Graphics: A17 Bionic Chip six-core graphics processing unit

Developer specifications:
Developers will need to be able to store and access large volumes of user data. As such, this project will make use of external database systems including the Django Admin panel and the third party database, PostgreSQL. Thus, user and post data will be stored primarily in the string data type, making use of lists and dictionaries within external databases to store information. Integers will also be used for functionalities such as post likes etc. and user profile images will need to be stored in a .jpg format.

Developers will need to be adept at implementing robust security measures to safeguard the large volumes of user data stored in external databases. Encryption protocols, secure socket layers (SSL), and access control mechanisms should be integrated into the database systems, including the Django Admin panel and PostgreSQL, to ensure the privacy and integrity of user information. Regular security audits and updates will be essential to stay ahead of potential vulnerabilities and evolving security standards, emphasising the project's commitment to user data protection.

User specifications

The needs of the users will also need to be taken into consideration during the development of this project. Users must be able to undertake all activities associated with a social media site. They must be able to create and view posts tailored to them, they must be able to communicate with other users through messages and comments, and they must be able to create a custom user profile that reflects their online identity. Furthermore, users must be able to interact with the website intuitively and all inputs must produce desired outputs.

The suitability of text/multimedia will also be taken into account. All fonts must be readable by users of all ages. Icons and symbols must be intuitive and large enough to click with ease. Furthermore, images and multimedia should be stored efficiently such that users can access Glowup with minimal bandwidth usage.

Inclusivity in design will extend to accessibility features, allowing users with diverse abilities to navigate the platform seamlessly. This includes providing alternative text for images and ensuring compatibility with screen readers to accommodate users with specific preferences or accessibility needs. Accessibility testing with users of varying abilities will be essential to identify and address any potential barriers in the user interface and will be employed during the testing phase of this project, potentially with peers.

In order to facilitate the greatest number of users, this platform will be developed as a website. As such, individuals can access it from any device, all over the world. Careful attention will be paid to ensuring the platform aligns with the specifications set out by the World Wide Web Consortium (W3C) and users will be able to access this social media from any modern browser. The requirements for users to access this site have been put into more detail in the hardware specifications section.

Packages:
In order to allow this project to function effectively, a number of Python packages must be utilised. Each of these packages targets areas of the specifications, including design, language and user experience. These include:

django (python framework) - My Major Project will be built using the Python website framework called Django. Django is a high-level Python web

framework that encourages rapid development and clean, pragmatic design. By developing my major project with Django it should facilitate the greatest number of users through the web, meeting my goal of accessibility.

tensorflow (sentiment analysis, recommender system) - TensorFlow is a free and open-source software library for machine learning and artificial intelligence. I will be using tensorflow to develop a sentiment analysis system to filter out negative posts as well as promote positive posts.

stream-chat (user messaging) - Stream Chat is a platform that enables you to rapidly build in-app chat messaging. I will be using it to develop the direct messaging system for my social media app.

References to Real World Systems

The rise of social networking across the 21st century has led to the emergence of a number of social media platforms, from which I have drawn inspiration for my major project. My project is inspired by specific features and elements of existing real-world social media platforms such as 𝕏 and Threads. These platforms provide users with an interface from which they can articulate their thoughts and share them with others.

𝕏
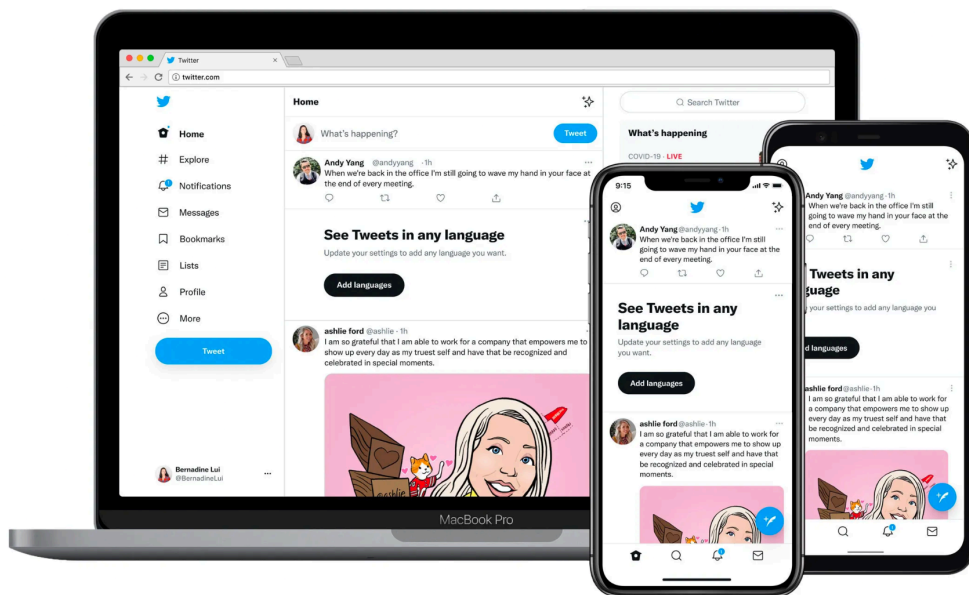
𝕏 (Twitter) is a social networking and microblogging service that was launched in 2006 by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams. It has since become one of the most popular social media platforms in the world, with over 330 million monthly active users.

Twitter allows users to create an account and share short messages, called "tweets," with their followers. Similar to Twitter's model, users on Glowup will have the ability to follow other accounts, curating a personalised timeline where they can seamlessly view the posts of those they follow. This feature encourages the formation of a virtual community and ensures that users can stay connected with the content that resonates most with them.

The interactive nature of Glowup is further enriched by features inspired by Twitter's functionality. Users can actively engage with the content by replying to posts, expressing their sentiments through likes, and sharing posts too. These interactive elements aim to encourage meaningful conversations and interactions on this platform.

These are all features I wish to incorporate into my social media app in order to facilitate the most engaging experience for my users whilst promoting interactions and deep connections. Twitter thrives off text-based posts and as such it is a major inspiration for my major project.

Threads
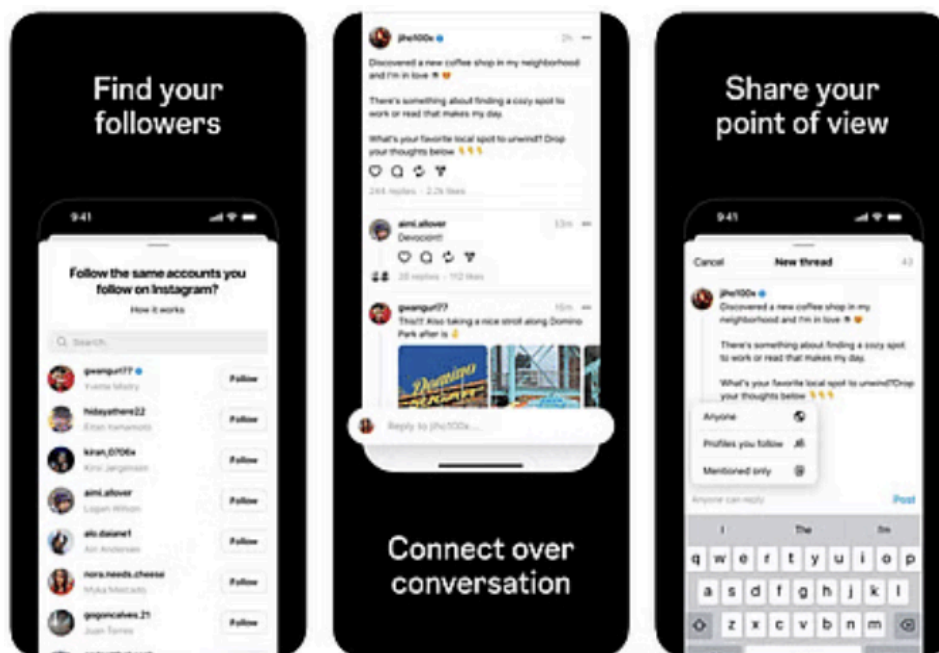
Threads is a social media platform developed by Meta and released in July 2023. It is a platform similar to 𝕏 that facilitates connections between its users through sharing and discovering content in an organised and curated way, with a focus on community and conversation. Whilst Threads is very similar to 𝕏 in its feature set there are several features that are unique to this platform which I intend to implement into Glowup.

Firstly, Threads employs a very minimalistic, clutter free interface. A minimalist design philosophy ensures that the interface remains visually clean and

uncluttered, focusing on essential elements and reducing unnecessary distractions. By embracing simplicity, Glowup strives to create a calm digital environment where users can engage with content without feeling overwhelmed. Intuitive navigation and a visually unobtrusive layout contribute to an overall sense of ease, allowing users to focus on meaningful interactions and content creation.

Threads also allows users to exclude posts with specific content. I will be using AI to filter out negative posts, drawing upon this removal of unwanted content in order to make Glowup a positive experience for all its users.

App Timers
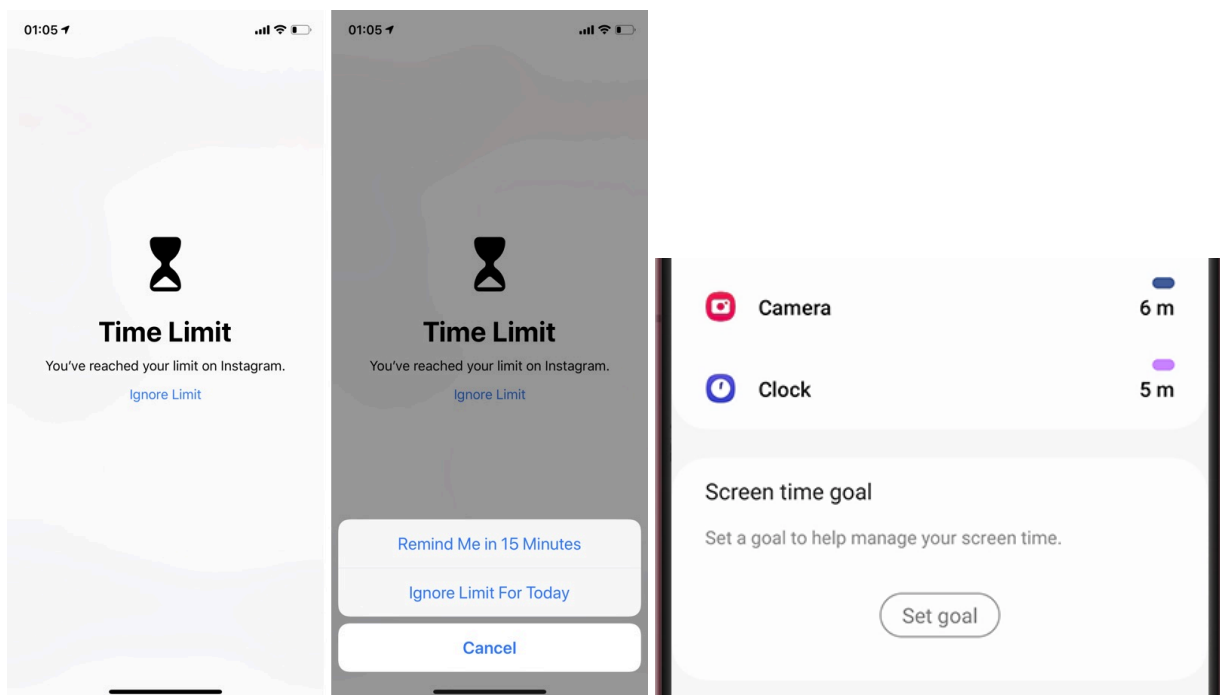
A key element of my major project is the inclusion of wellbeing timers and alerts for when a user has spent a certain, predetermined time on the app. This is a functionality that draws from app timers inherent to the Apple iOS and Android systems. The inclusion of this feature directly in the app should promote a greater level of user mindfulness and lead to a more intentional use of the app. Like its iOS and Android counterparts, Glowup's wellbeing timers will allow users to set specific amounts of time before they are reminded to take rest breaks, and gently encouraged to take some time off the app.

Wellbeing Resources

Understanding anxiety

Feeling anxious is one way our bodies keep us safe from danger. But sometimes we can become overly worried and if it affects daily life, it may be an anxiety disorder.

Learn more ›

Understanding bipolar disorder

Major shifts and changes in mood can be signs of bipolar disorder. This information and resource can help you understand more about the condition.

Learn more ›

DIGITAL TOOL
Online Clinic

Free personal assessment of your current mental wellbeing that you can use to discuss with your GP.

Learn more ›

Promoting mental health and wellbeing is a major aspect of GlowUp and as such the app will contain a number of resources to keep users informed on what they can be doing to level up these aspects of their life. I will be drawing upon pre-existing websites, such as Beyond Blue and Black Dog Institute, which have the same functionality - providing mental health resources to their users. These mental health resources cover a spectrum of topics, including stress management, mindfulness practices, coping mechanisms, and strategies for maintaining a healthy work-life balance. The information I provide on Glowup will be curated and sporadically updated to ensure relevance and accuracy.

Artificial Intelligence

My major project also draws upon emerging technologies, in particular Artificial Intelligence. Specifically, GlowUp Social will include sentiment analysis AI in order to filter out negative posts and boost positive posts in the algorithm. Furthermore, AI models will be used to filter out inappropriate and offensive content such that users can have wholesome experiences on this app.

Software Development Approach

The rapid application development (RAD) approach is characterised by its low-cost and low-timescale nature. The main aim of this approach is to create a usable software solution in the shortest time possible as well as at the lowest cost to the client. Furthermore, The RAD approach is known for its ability to quickly adapt to new requirements and feedback from its users, making it uniquely suited to the production of my Major Project.

A key characteristic of the RAD approach is the creation of multiple basic versions of a software solution whilst gradually adding features until it meets the desired specifications. With this approach I can gradually add to my program and individually test out new features. This will be particularly useful in the implementation of aspects of the code such as AI sentiment analysis and updates to the UI.

The RAD approach allows the developer and user base to closely communicate in order to ship the most user-targeted application at the conclusion of the project's development. This can have a number of other positive benefits, such as a greater variety of user-requested features, reduction in confusion, elimination of unknown variables and a more useful software solution. Furthermore, direct user feedback can help uncover potential risks and software issues early on in the development process, saving time and resources in the long term.

There are a number of key features of the RAD approach that set it apart from other software development approaches. In order to gain more clarity on this, I will be examining how it compares to the structured approach to software development. Whilst, the following paragraphs will elucidate this difference, I intend to continually draw links between the two approaches throughout the rest of this section.

The structured approach to software development is a systematic and organised method for designing, implementing, and maintaining software systems. It involves breaking down the development process into well-defined phases, each with specific goals and activities. The structured approach aims to improve the clarity, maintainability, and efficiency of the software development process. Due to its comparative complexity, the structured approach is

generally used for large scale projects where team size and budget are generally not as big of a constraint.

The RAD approach differs greatly from the structured approach due to the lack of detailed pre-planning needed. Instead of dedicating several months to developing detailed pseudocode and only then beginning the implementation stage, I can make use of CASE tools to outline and evaluate the requirements quickly and efficiently.

Furthermore, unlike the structured approach, RAD allows the developer to respond to changing user requirements and reflect this in the implementation of the project through the addition of new or changed features. These changes could include alterations to the way I store data in external databases based on the size and requirements of the user base as well as modifications to the features of the social media app itself based on real-world user feedback. By using the RAD approach I can eliminate a lot of the intense and time-consuming planning and resource use that is inherent to the sequential nature of the structured approach.

Some of the additional key features of the RAD approach most suited to this project include:

Use of existing routines - Wherever possible, existing code routines are used to reduce the development effort. It is common to see the final application utilising services of other various applications and existing code modules to complete its task. Python's extensive collection of modules will allow me to draw upon pre-existing software such as Tensorflow and Django as well as source code and tutorials to create my software solution in a faster and more time efficient manner.

Lack of formal stages – In the RAD approach, design and development of products progress informally, and therefore the necessity for formal models, data structures and algorithms are greatly reduced. As GlowUp is being developed by a small number of developers and includes close collaboration with end users, this unstructured approach will work well.

Short time period – Whilst I will be given 8 months to complete this project, this is relatively small compared to the typical amount of time used to develop a project as large as a social media platform. As such, the efficiency gains from other aspects of the RAD approach (lack of documentation, lack of formal stages, use of pre-existing software) will allow me to satisfactorily achieve user requirements whilst not going over the allocated time. The structured approach to the development of software solutions requires large teams with defined roles, taking up large time periods. As these resources are not available to me, the RAD approach should satisfactorily meet my requirements.

Low budget – Glowup should ideally be developed without any cost to the developer. This can be achieved by using pre-existing software and free programs such as GitHub and Vercel to develop and publish my project. As such, I will not be required to use the costly software inherent to larger scale projects under the structured or agile approach, whilst still achieving all of the desired functionalities.

As such, the rapid application development (RAD) approach to the development of software solutions is well-suited to this project and should contribute to an efficient, low-cost and functionality rich product.

Programming Language Selection

Python is a lightweight, object-oriented program developed by Guido Van-Rossum in X and extensively updated since then. As of 2021, Python is the world's 2nd most popular programming language for developers and for good reason too. My decision to use Python as the primary language for the development of my website stems from a number of key reasons.

By developing projects in python since 2015 I have been able to build a solid foundational understanding of the language and a proficiency in its use. This makes it an ideal language as I will not be restricted by the steep learning curve associated with the use of a new language throughout this project. This comfortability with the general syntax means that I can put more of my mental resources into the actual functionality of the project through the development of more sophisticated features such as the use of AI in sentiment analysis. Furthermore, my knowledge of the language will allow me to program my major project more efficiently, both improving time efficiency and the general efficiency and maintainability of the project itself.

As python is a modern and frequently updated language, it can satisfy all of the requirements I need during the development project. The latest version of Python is compatible with a large variety of modules and packages that I can use to add functionality to my project and streamline its development process. The major framework I will be using is called Django, which will take care of routing, backend processes and the general user interface. Django provides an organised and scalable backend structure to Glowup, managing data processing efficiently. The framework's templating engine facilitates dynamic and responsive user interfaces, promoting code reuse and maintainability through its adherence to the DRY (don't repeat yourself) principle. Additionally, Django's support for responsive design ensures a seamless user experience for Glowup's users across a wide range of devices.

Furthermore, I will be making use of the TensorFlow package. Python is uniquely well-suited to the development of artificial intelligence solutions, due to both the features of the language and the large community surrounding it. TensorFlow will allow me to create the AI aspects of my project, namely the sentiment analysis system I will use to classify the positivity of posts as well as the detection of inappropriate content. This will further aid in allowing me to

create a software solution that promotes positivity and wellbeing in the general population.
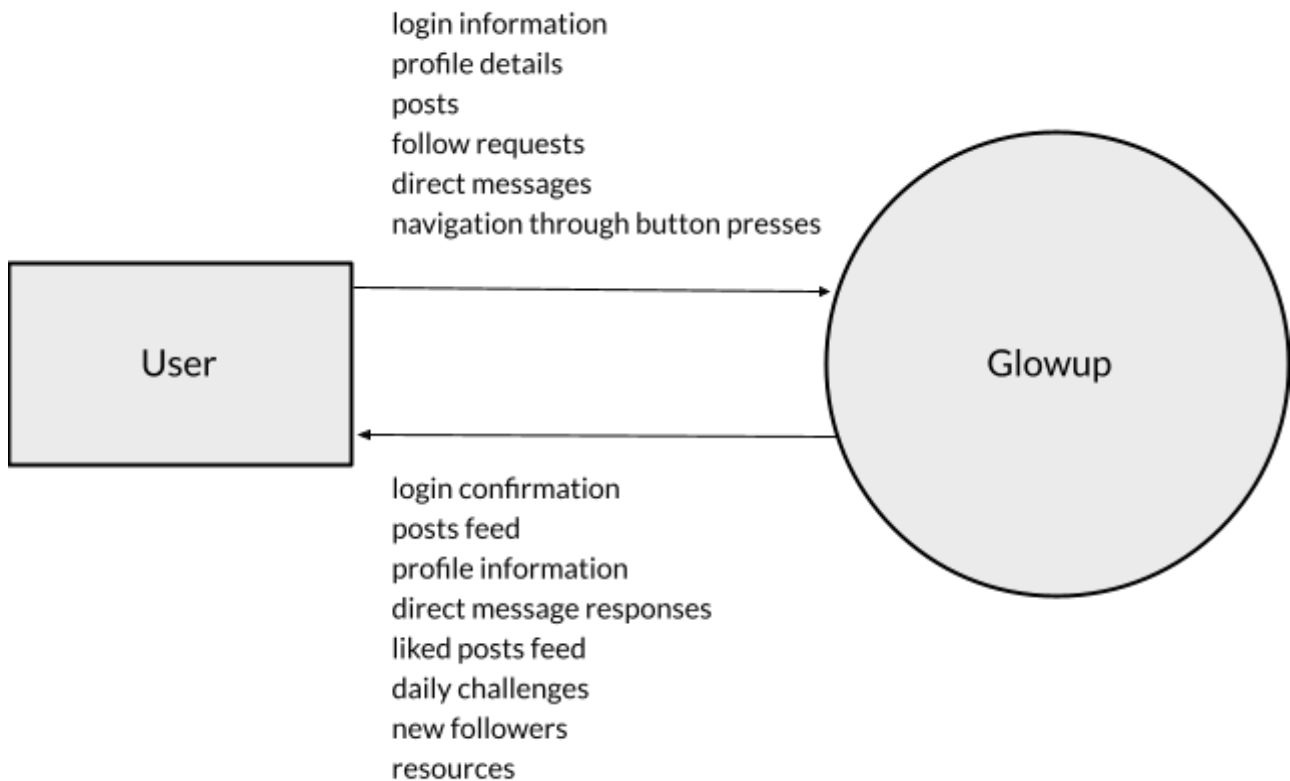
A minor drawback of python is its slower performance in comparison to compiled languages such as C++ and Java. This should not largely impact my project though because of the low system requirements associated with a website. The loss of speed will be negligible and I believe heavily offset by the positive aspects of Python, such as its robustness, package variety, familiarity and syntactical beauty.

It is also important to note that whilst Python will be the major language used in the development of GlowUp, since it will be developed as a website there are a couple of secondary languages that must be employed, namely HTML and CSS. HTML provides the ability to build and scaffold the outline of a website, including its text, multimedia, and other visual elements. CSS is also a key language due to its ability to style the user interface, improving the visual aesthetic of the UI. These languages are uniquely suited to creating websites and as such must be used in the development of my social media site.

System Documentation

Context Diagram

login information
profile details
posts
follow requests
direct messages
navigation through button presses

User → Glowup

login confirmation
posts feed
profile information
direct message responses
liked posts feed
daily challenges
new followers
resources

IPO Chart

Input	Process	Output
User opens website	- Check if user signed in - If yes, display home page - If no, display sign in page	Home or signin page opened
User types in sign in details	- Send to admin panel - Check if user exists - If yes, prompt to retry - If no, check if passwords match - If yes, display error	User signed in

	message - If no, sign in user	
User scrolls in feed	- Fetch posts - Sequentially display posts	Display posts
User clicks create post button User inputs post details	- Create post dialogue opens - Post contents validated - If inappropriate, display error message - Otherwise, send to database	Post posted
User presses like button on existing post	- Increase like counter	Like confirmation
User inputs direct message	- Check if message is appropriate - If no, display error message - If yes, send message to steam-chat API	Sent message
User clicks on profile	- Fetch profile data	Display profile data
User follows profile	- Update following list	Profile followed
User comments on post	- Check if comment is appropriate - If no, display error message - If yes, send comment to database	Comment posted

User clicks on daily challenges	- Fetch daily challenge	Display daily challenge
User presses complete button	- Daily challenge status updated - User streak increased	Challenge completed

Gantt Chart

🗓 Major Project // Gantt Chart

Task	Month								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Documentation									
Context Diagram	▓								
IPO Diagram	▓								
Gantt Chart	▓	▓							
Proposal	▓	▓							
Data Flow Diagrams				▓	▓				
Structure Chart				▓	▓				
Pseudocode				▓					
Instructions					▓	▓			
Coding									
Accounts	▓	▓	▓						
Basic User Interface		▓	▓						
Visual Design Plan									
Database			▓	▓					
Post Feed			▓	▓					
Messaging			▓	▓					
AI Functionality			▓	▓					
Final User Interface				▓	▓	▓			
Resources/Challenges									
Minor Tweaks						▓	▓	▓	▓
Other									
Meeting						▓	▓	▓	
Testing						▓			
Evaluating Project							▓	▓	

Quality Assurance

In order to assure my application is of the highest quality, there are a number of general criteria that I must achieve, employing specific management processes to reach these objectives.

Elimination of most/all bugs - Ensuring the system is bug-free is essential for a smooth user experience. Regular updates and patches should be applied to eliminate new bugs that may arise as the platform evolves.

Effective collection of user inputs - Collecting and managing user inputs efficiently is crucial for the website's functionality. This entails implementing validation checks and user-friendly forms to capture data accurately, ensuring that the users' interactions are seamless and error-free.

Privacy/Data security - Protecting user data and ensuring their privacy is a top priority in my application. In order to address this, I must ensure that all user data is safely stored in a secure database. Furthermore, secure authentication and access control measures must be in place so that sensitive information is safeguarded.

Inputs produce desired outputs - The website should consistently provide the expected results for various user inputs. This requires thorough testing and validation of input-output processes to guarantee the website's reliability and functionality. I will be using peer checking to ensure that all inputs work correctly and that the broader application works as intended.

Readability/Maintainability of code - Due to the ever-evolving nature of this project, I must ensure that all code I write is easy to understand and maintain. This will facilitate the ability to make future changes to the code and respond to changing project requirements. In order to promote maintainability I will also be employing CASE tools, such as IPO charts and context diagrams, which will provide a central outline of the program's functionalities and data flows.

Functional and usable - The performance of the website, including response times, scalability, and user interface responsiveness, should be optimised to deliver a seamless and enjoyable user experience. Regular monitoring and performance tuning are essential to keep the system running smoothly. I will be

using tools such as Google's Lighthouse and Developer Tools to monitor key insights, such as Largest Contentful Paint (LCP) and Cumulative Layout Shift (CLS).

Aesthetics - Aesthetics play a vital role in user engagement. Design choices, including layout, colour schemes, and user interface elements, should align with Glowup's brand identity and user preferences. Regular design reviews and user feedback gained through peer testing will help enhance the platform's visual appeal.

Enjoyability - Beyond functionality and aesthetics, the overall enjoyability of the platform is critical for user retention and satisfaction. This involves factors like content quality, interactivity, and community engagement features. Continuous user feedback and data analysis can inform improvements to enhance Glowup's user experience and lead to a greater number of individuals who are taking their mental health and happiness into their own hands.

Management Process

In order to achieve all of these criteria, I will be employing a number of management processes, some of which have been referenced already. These include:

Documentation - Software documentation provides information about a software program for everyone involved in its creation, deployment and use. A major guiding stone for my project is the consistent use of various types of documentation to both guide and record the development process. These include a logbook, CASE tools and Gantt charts.

Logbook - In order to keep track of the development process I will be maintaining a logbook that records key information such as what features were worked on and any bugs that arose, such that any issues in the development process can be addressed promptly.

CASE Tools - Furthermore, to promote maintainability of my code I will also be employing Computer-Aided Software Engineering (CASE) tools, such as IPO charts, dataflow and context diagrams, which will provide a central outline of

the program's functionalities and data flows. This ensures that whilst implementing the features of my program I will be adhering to its design specifications and taking into account all relevant processes and data flows.

Gantt chart - Gantt charts enable precise task scheduling, allowing me to allocate resources and plan my major project timeline effectively. Tasks are laid out in a chronological order, emphasising dependencies and relationships between different components. Consistently referring back to my Gantt chart will ensure that I meet all of the user requirements in the given time frame.

Version Control - Version control is the practice of tracking and managing changes to software code. My project will leverage GitHub as the primary version control tool. GitHub offers a systematic solution for monitoring and overseeing alterations made to the software code throughout its evolution. Through the use of branches, I can seamlessly work on distinct features or address bugs concurrently, promoting parallel development without the risk of conflicts. This version control system also facilitates the identification of specific milestones in the development timeline, offering the flexibility to revert to previous states if required.