

Task 1: Ideation & Innovation (GAC2)

04 February 2026 10:40

This task answer should be approx. 6-700 words with supporting IEEE citations.

Q.1: Innovation: Document a summary of **some of the areas/concepts from Topic 1 of Unit 1** on Moodle. The areas covered in the following **online topic** will help you to answer this question.

- **Online Topic:** Unit 1 Topic 1 - How Innovation Shapes the World. The role that creativity and innovation plays in the development of society and self.

Q.2: Ideation:

- Document **several project ideas** from areas of personal interest related to your programme of study. Then **select 1 project idea** that you would like to take forward.
- Document a **project title** (no more than 15 words), a **single Aim and several Objectives** and **brief description** of your project idea.

Q.3: Research:

- Search to discover and document 3-5 key **courses and sources** that will help you to achieve your project's Aim and objectives.

Q1

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Sub Section 1: Innovation is Everywhere

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This subsection describes how innovation is an innate human ability and not exclusive to individuals, even existing as far back as prehistoric times. It considers how innovations can change the world, how we interact with others and enhance the lives of everyone.

It continues to describe how innovation changes the world for the better, using statistics such as the drop in poverty and the rise in average years of education for women, to justify and prove how innovation can improve society.

It shows how innovation is not just for those the past, or people who are viewed as "creatives", but anyone with an idea can innovate and help change society for the better.

Sub Section 2: The Onward March of Technology

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This subsection describes how technical progress is achieved, further describing the four different industrials revolutions and Kondratieff Waves.

It states that there are four major industrials revolutions, with each having a distinctive indicator for what it is, which are (in order):

1st Industrial Revolution - Machines can now do field work, homes are heated using coal and work changes from production of food to goods manufacturing in factories.

2nd Industrial Revolution - Dawn of electricity, electrical heating from power stations of homes, the creation of the telephone and wireless communication.

3rd Industrial Revolution - Computers are used in everyday lives, both personal and workplace, digital systems become usable and therefore more common and information is now being used in more sophisticated ways.

4th Industrial Revolution - Computerised or artificial intelligence is now being used in the workplace, the internet is seen as a virtual "world" to meet people and work in, society has high trust in technology and its security and even money is now virtualised.

Sub Section 3: Creativity and You

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This subsection argues that all humans are born creative and it shows you how to think of yourself as a creative person, challenging the idea of what a "creative" person actually is and emphasising its importance in society and personal development.

It further covers how the taught belief of one self to be creative or not can actually influence our creative potential. It states that we can tap into creativity by allowing ourself feel and experience emotions and feelings, or as Descartes believes the "six basic passions", which are:

Wonder

Desire

Love

Hatred

Joy

Sadness

Descartes believes that these basic passions then can deviate into further emotions, such as vain, anger, regret, etc. These passions are viewed as fuel for ideas that allow us to think of creative ways to fulfil those desires, allowing them to be a great tool and source of creativity.

Q2

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Project Ideas

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Skill Development - I would like to enhance my coding capabilities, particularly by expanding my current knowledge of programming languages other than C++, Java and Python.

Positive Social Impact - I would create an online social "world" where others can escape to and be themselves, similar to how the old net worked (2000s era)

Employability - I would like to develop an app or website using a modern tech stack to bolster my skills, using the website as a sort of CV to host my projects and other skills as well as info about myself.

Project Idea - I would like to develop an app that works as an overlay for video games, such as League of Legends or Minecraft, that would tell you your next objective, item build path, etc, as most current apps rely on Overwolf (a very resource intensive application), which would benefit many, as well as making it open-source.

Ideas:

Overlay/Companion app for videogame that helps display relevant information needed to progress/win.

Personal Website for CV

Website that helps Americans calculate their taxes for free

Free health and fitness app that tracks workouts, calories and macros, easy to follow UI and no ads

Online live chat room with pure anonymity

An emulator for an old games console

Pros/Cons

Overlay app will require working alongside the games code of conduct to ensure it does not breach it, then it will need to be approved by the company, it will also require use of their API, which I do not have experience of using an APIs, and the average user with the strength of PCs today will overlook the resource-hog that Overwolf consumes, it is outside my current skill set and familiarity, however it will be a passion project that I am invested in personally.

Personal website, while helpful for myself, will not teach me much and develop my skillset, nor would it benefit society in anyway.

A website that helps to calculate tax is not very interesting, despite it being very beneficial to the public, and it would not pose a personal interest for myself.

A free fitness app is both personal and interesting, being very beneficial to the public and consumer friendly being both free and open-source, however publishing to the Apple App store would require an upfront fee, as well as maintenance and further updates, all while being free and creating no profit. This would also require two apple devices (Mac to code, phone to test) and experience coding in Swift, their language.

An online chatroom will require constant monitoring and keyword exclusions in order to ensure everyone is safe and that there is minimal toxicity, it has also been done quite a few times and in today's world these are very rare and often unused, however it is a simple project that with a realistic end goal.

An emulator would be a challenging project, however due to age these come with a lot of documentation (as even modern consoles have somewhat working emulators) and this would teach me many new skillsets, such as different languages, translation layers and more. This would have a marginal impact on society as they already exist and have been improved upon for decades, however this can then lead to helping ongoing emulation projects in the future.

Project Idea:

The project idea that I would like to take forward is an overlay app for a video game, more specifically League of Legends, as this is a game I personally play and have many friends who do. This allows for a personal investment in the project, alongside valuable testing and feedback from others users regarding usability and features. There is also documentation on how to create simple companion apps for these games developed by their publishers and how to use and access their APIs.

The mix of personal investment, high documentation, previous companion apps existing and finally the ability to improve on existing apps, while also being able to make it open-source and free without any ads, leads me strongly to this idea, further highlighted by its PSI in the community, as many apps are currently plagued with advertisements, or unnecessary reliance on other unwanted apps.

Project

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Project Title:

Development of a companion app for League of Legends

Description:

An application that will take information from the video game "League of Legends" using the Riot Games API, in order to display helpful information to the end user, to help them progress in skill and to win the match, ensuring that it follows the appropriate guidelines, so it can be approved and not trigger Riot's kernel-level anti-cheat. This will take form in game as an overlay, and outside of the game as an external application UI. This will be achieved by using JavaScript/Python to make API requests.

Aim:

This project aims to investigate and develop a companion application for the video game "League of Legends", which will display information such as best match ups, counter picks, jungle timers and what item to build next, all by using information taken from the game using the Riot Games API, in real time for the user to see.

Project Objectives:

- Capture and analyse relevant game data (i.e Friendly and enemy team compositions, jungle camp timers, lane matchups, enemy cooldowns).
- Display next steps to help win the game and relevant data in real time (for example: get priority in lane by pushing minions under enemy tower to get objective pressure).

Q3

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Sources

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API Learning - <https://www.udemy.com/course/ajax-javascript-json/>

JavaScript - <https://www.udemy.com/course/javascript-course-coding2go/>

Riot API - [The Riot API with Python Part 1: Our First API Call](#)

LoL Related - <https://riot-api-libraries.readthedocs.io/en/latest/lcu.html>

Frontend Development - <https://open.umn.edu/opentextbooks/textbooks/1656>

Task 2: Project Management (GAC3)

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Your answers to the questions below should refer to a project/research area of your choice (related to your programme of study). The task answer should be approx. 6-700 words with supporting citations.

Q.1: Document the **Project scope** including: a proposed **solution** to your project aim, the **required Technologies/resources** to be used, a **project timeline** and **task schedule**.

Q.2: Using a software tool of your choice, create a **Gantt chart** to document your project stages.

Q.3: Identify some **risks/challenges** your project could face and document what you can do to reduce/remove them.

Q1

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Solution

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At the end of this project the desired outcome is that this idea should be developed into a full windows application, capable of overlaying seamlessly into the League of Legends client, displaying the most popular build path (by win rate %) and enemy team information, such as rank.

Resources

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The required resources needed to complete this task are a computer with an IDE installed to be able to program the application, potentially alongside JavaScript courses and academic books as well as documentation on the Riot Games API.

Timeline

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09:59

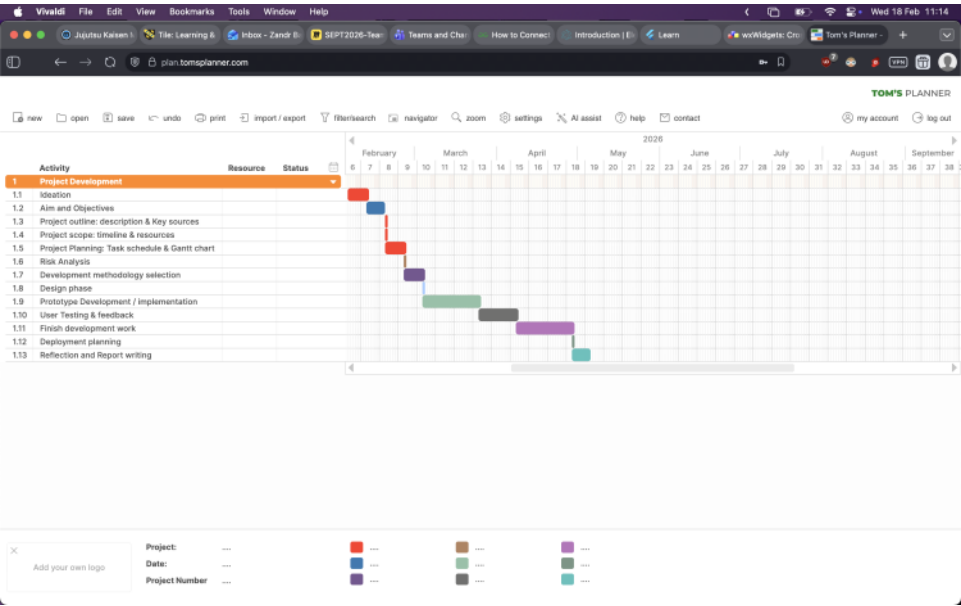
Task	Start Date & End Date
Ideation	04/02/2026 – 11/02/2026
Aim and Objectives	11/02/2026
Project outline: description & Key sources	18/02/2026
Project scope: timeline & resources	18/02/2026
Project Planning: Task schedule & Gantt chart	18/02/2026
Risk Analysis	25/02/2026
Development methodology selection	25/02/2026
Design phase	4/03/2026
Prototype Development / implementation	4/03/2026 - 25/03/2026
User Testing & feedback	25/03/2026 - 8/04/2026
Finish development work	8/04/2026 - 29/04/2026
Deployment planning	29/04/2026
Reflection and Report writing	29/04/2025 - 05/05/2026

Q2

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Gantt Chart

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Q3

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Risks/Challenges

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Potential risks of this project, as a university student, could be insufficient planning and unrealistic timelines, as this is many students first time managing and developing a project in a professional setting, therefore they are prone to said challenges. Poor planning and inadequate risk management are widely recognised causes of software project failure [1]. To avoid this, we can use tools like Miro, to develop user stories, an MVP and other helpful structures to define the outline of our project.

To avoid unrealistic timelines we can use tools like Tom's Planner to create a timeline for each individual activity. This can be visualised using a Gantt chart, which is a widely used project management tool for organising and monitoring task progression within a defined schedule [2]. This helps ensure that time is distributed effectively across all stages of the project.

Another challenge for a student would be limited resources, as a student would lack the funding a normal corporation, or even a full-time worker would. To combat this, it is important to keep the scope of the project limited and not to fall victim to scope creep, which can be avoided by following AGILE and similar methodologies.

Risk no.	Risks	Impact	Contingencies
1.	Insufficient Planning	High	To prevent this we can use project management tools, such as Trello and Jira, to plan out the timeline of our project, which helps us to plan each stage accurately and prevent time mismanagement too.
2.	Skill set	High	To prevent this we can either develop a project that is within our current skillset, or we can develop a smaller project outside of this, and use development and planning time to learn the necessary skills to progress the project, which should of course fit into the timeline without any issue.
3.	Unrealistic Timelines	Medium	To prevent this we can use tools such as Excel or Tom's Planner to create the timeline for our activities, providing them an appropriate amount of time, enough that each is more than needed to allow for flexibility. We can also prevent this by keeping to the scope of the project and not adding or removing any activities from the project.
4.	Scope Creep	Medium	To prevent this we can use User stories from AGILE to lay out what features are necessary using an minimum viable product, ensuring that only the necessary features are implemented in a timely manner.

Task 3: Project Development method & Design work (GAC4)

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Your answers to the questions below should refer to a project/research area of your choice (related to your programme of study). The task answer should be approx. 6-700 words with supporting citations.

Q.1: Describe a suitable **Development method** that will help you plan and complete your project.

Q.2: Document and describe some project '**design work**'. 2 pieces required, e.g. depending on the nature of your project example design work could include: a requirements specification, sketches/drawings, storyboard, wireframes, flow chart/UML diagram, ERD data structure, network structure diagram, network security architecture/diagram.

Q.3: Use several screenshots with brief description to document some **initial practical implementation** work for your project.

Q1

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Development method

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The development method this project will be the Waterfall model alongside Agile.

The Waterfall model has been chosen due to its linear approach to each phase, which takes each section of work and completes it in order until each part is complete and doesn't allow for backtracking.

Due to the scope of this project, this seems to be a great fit as the Waterfall model excels in small to medium sized project, it creates clear goals and objectives to work towards, which helps to create a clear and a defined timeline for the entire project [3].

Agile fits into this project as it allows for flexibility in the framework, which Waterfall does not. This will help to create a more balanced approach where the needs and necessities of the project can be adjusted after a whole cycle. It is also a user-focused method, which is the core of this project, therefore allowing for user feedback to be accepted after the first cycle, then used to make adjustment to the current product.

By using both of these models, this allows the project to effectively create a minimum viable product (MVP), instead of the finished version as per Waterfall, and to then build upon and take in user feedback where necessary to improve it in the next cycle [4].

Q2

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Requirement Specification

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Software Development Project

Project Constraints:

Budget: N/A
Project timeframe: Complete by 5 th May
Hardware/software: University & Personal PC. IDE such as VS Code. Access to Riot Games API.

Functional Requirements

ID	Title	Priority	Description
FR-01	Framework and Tech stack	High	Use HTML, CSS and JavaScript for backend. Frontend can be React, Vue or other appropriate solutions.
FR-02	Platform Support	High	Must run on all desktop devices (i.e. Linux, Windows and Mac)
FR-03	Core Application Features	High	Implement core features such as opponent information, next item to build and best matchups in game.
FR-04	Hosting	Medium	Host the website on a free to use platform, such as Render.

Non-Functional Requirements

ID	Title	Priority	Description
NFR-01	Performance	High	Pages should load within 4 seconds on standard connections.
NFR-03	Usability	High	Provide clear UI and easy navigation.
NFR-02	Adaptability	Medium	UI should adapt to different screen resolutions and window sizes.
NFR-04	Scalability	Medium	Allow for new features to be added, such as support for other games, with minimal changes to the design.

Security Requirements

ID	Title	Priority	Description
SEC-01	Data Protection	High	Ensure API keys are secured.
SEC-02	Riot Games T&C	High	Must follow guidelines described by Riot Games on the limitations of a 3 rd party application.

Testing & Validation

ID	Title	Priority	Description
TST-01	Performance Testing	High	Test load times and responsiveness under average and high usage.
TST-03	Usability Testing	Medium	Have users test and provide feedback on all aspects of the website.

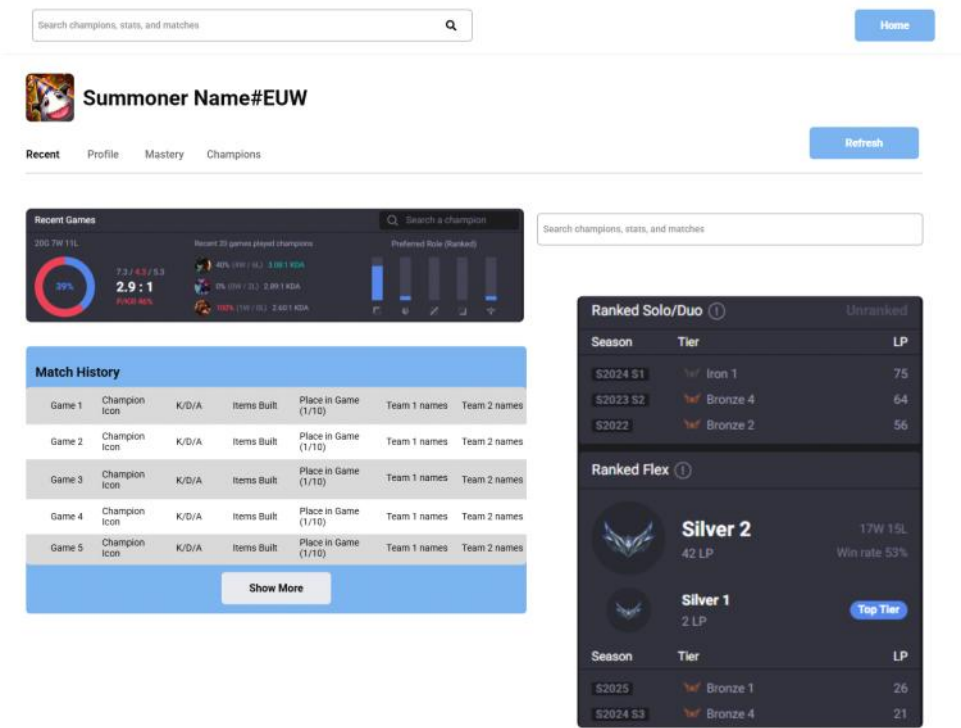
Deliverables

ID	Title	Priority	Description
DEL-01	Web Application Prototype	High	Deliver a functional web app with core features implemented.
DEL-02	Source Code	High	Provide complete, well-documented source code.
DEL-03	Design Assets	Medium	Include UI assets such as icons, images, and stylesheets.
DEL-04	Testing Reports	High	Provide reports for all testing.

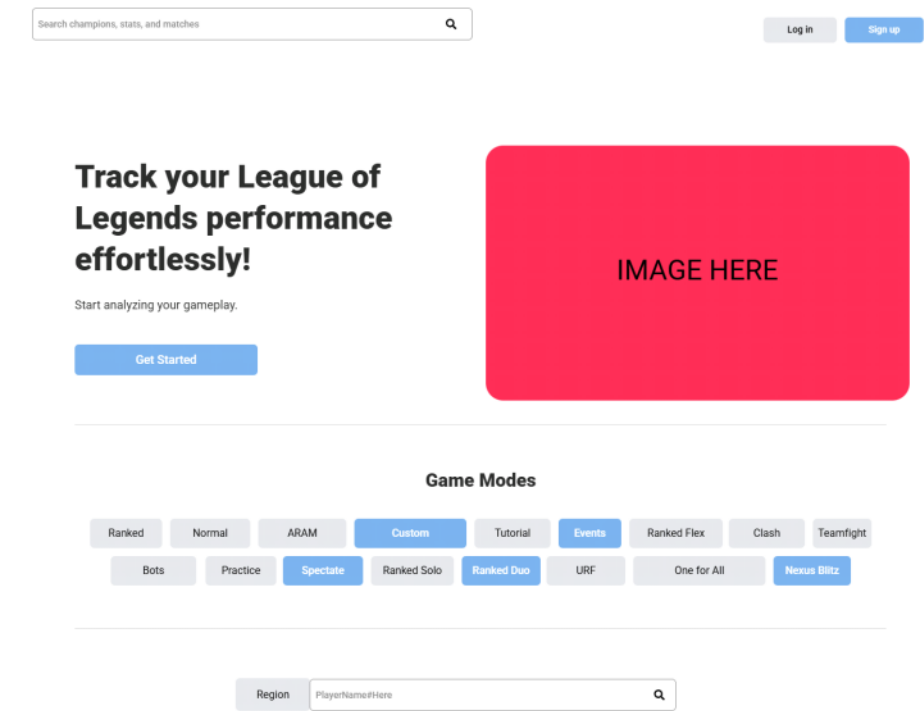
Prototype Mock-up

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Below are two mock-ups for a Home page and a Statistics page for the project.



Page 1: Statistics Page



Page 2: Home Page

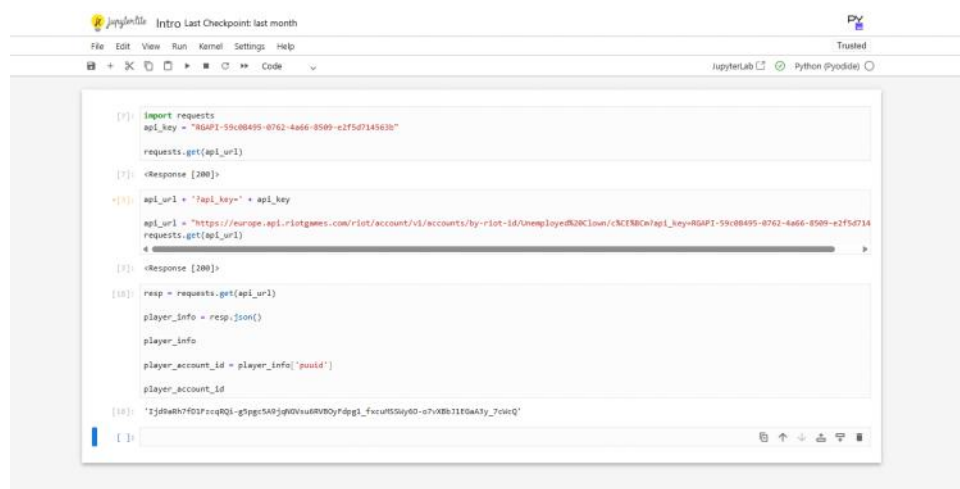
Q3

09 March 2026

16:53

Practical Implementation

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```
[7]: import requests
api_key = "RGAP1-59c08495-0762-4a66-8509-e2f5d714563b"
requests.get(api_url)

[7]: <Response [200]>

[8]: api_url = "api_key=" + api_key
api_url = "https://europe.api.riotgames.com/riot/account/v1/accounts/by-riot-id/Unemployed20K1own/cXEN8Cn/api_key=RGAP1-59c08495-0762-4a66-8509-e2f5d714563b"
requests.get(api_url)

[8]: <Response [200]>

[10]: resp = requests.get(api_url)
player_info = resp.json()
player_info
player_account_id = player_info["puuid"]
player_account_id

[10]: '2jdbah7f01fzsqQI-g5pgc5A9jg0VvudRv0yfdg1_fccu55uy60-o7vX8b31f0a3y_7cncQ'
```

Making the first API call, logging the information received in a .JSON file, then accessing specific data such as the playerID (puuid). The first call is to ensure that the API is working (will result in a 200 response) and the second call adds an argument to the call that adds the key correctly to the end of the URL call.

Please note that the API key refreshes every 24hrs, therefore it being visible here is of no concern.



```
[201]: def getMatchData(region, matchID, api_key):
api_url = (
    "https://" +
    region +
    ".api.riotgames.com/lol/match/v5/matches/" +
    matchID +
    "?api_key=" +
    api_key
)
resp = requests.get(api_url)
data = resp.json()
return data

[202]: def did_win(puuid, match_data):
part_index = match_data["metadata"]["participants"].index(puuid)
return match_data["info"]["participants"][part_index]["win"]

[203]: region = "EUROPE"
matchID = "E1Ad_7780426929"
api_key = "RGAP1-59c08495-0762-4a66-8509-e2f5d714563b"
puuid = "2jdbah7f01fzsqQI-g5pgc5A9jg0VvudRv0yfdg1_fccu55uy60-o7vX8b31f0a3y_7cncQ"
match_data = getMatchData(region, matchID, api_key)

[204]: match_data["info"]["participants"][part_index]["win"]

[204]: True

[205]: print(did_win(puuid, match_data))

[205]: True

[206]: for matchID in matches:
match_data = getMatchData(region, matchID, api_key)
print(did_win(puuid, match_data))

[206]: True
```

Beginning to define functions and their uses, here being a function to get the data from a specific match, then a second function for checking if they won or lost and finally a loop which displays their last 20 games (max on a free API scheme)

References

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[1] B. W. Boehm, "Software risk management: Principles and practices," *IEEE Software*, vol. 8, no. 1, pp. 32–41, Jan. 1991.

[2] Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, 7th ed. Newtown Square, PA, USA: PMI, 2021.

[3] I. Sommerville, *Software Engineering*, 10th ed. Harlow, U.K.: Pearson, 2016.

[4] B. Boehm and R. Turner, *Balancing Agility and Discipline: A Guide for the Perplexed*. Boston, MA, USA: Addison-Wesley, 2004.

