ANALYSIS

A) ANALYZE THE REQUIREMENTS

Python is an interpreted,high level,general-purpose programming language.Created by Van rossum and released in 1991,python's design philosophy emphasizes code readability with its notable use of significant whitespace.Having machine learning and data analysis packages,python has extensive support for research.Most important features of python are:

- High-level programming language
- Interpreted
- Multi-purpose
- Extensible
- Multi paradigm

In this a simple number guessing game that aims to restore basic programming skills while applying modern programming best practices.

Discussion

By starting with a simple game function it is focused on the right technology instead of more advanced algorithms. The code of the game is done in Python and taking advantage of its simple syntax and extensive libraries (Heinold, 2021). A random integer between 1 and 100 is generated using Python built-in random module. This number is stored in a variable and serves as a target for users to guess. Validation is included to ensure that only valid integers are entered. Loops allow one to guess multiple times without restarting each round of the program. Functions divide the execution into logical parts such as initializing the game asking for inputs checking the assumption and computing the results. Further decomposition can occur by grouping related information and behavior into object oriented categories. In addition to reinforcing the basics of the language and established software design paradigms are used. Version control with git makes it easy to track changes a nd collaborate and report bugs during development. UML diagrams provide a changing lens on system structure and functionality. User stories map features and framework progressive and value passing. Extensible features can be illustrated using domain oriented design. Automated testing and continuous integration increase regeneration with rapid feedback (Thaker, 2020). The static analysis identifies potential errors and targets for code quality improvement. Finally, clean coding techniques and ide skills are implemented aimed at improving overall productivity. The game is designed in such a way that consciously using both coding basics and modern best practices to create a simple game will significantly improve the programming skills. The versatile methodology is designed to be applicable to the more complex software projects one undertake in the future and are poised for success.

B) CONCEPTUALISE AND INITIALIZE THE GAME

Define the basic rules like how the game starts,the range of numbers to guess,and the condition of winning and losing.
Setup the necessary variables,such as the target number,the players guess,and any counters you need.

C) GENERATE A RANDOM NUMBER

Use the random module to generate a random number within a specific range.Handle cases where input is not a number

D) GET PLAYER INPUT AND VALIDATE INPUT

Use the input( ) function to prompt the player to enter their guess.Ensure that the players's input is a valid number within specified range.Handle cases where the input is not a number.

E) COMPARE AND LOOP UNTILL CORRECT GUESS

Compare the player's guess with the randomly generated target number.Provide feedback on whether the guess is too high,too low,or correct.Implement a loop that continues untill the player correctly guesses the number.Provide hints after each incorrect guess.

F)WINNING AND LOOSING CONDITIONS

Determine the conditions for winning(correct guess) and losing(exceeding a certain number of allowed attempts.).If a player wins they also have a chance to increase their highscores in later rounds.Also,every round is more challenging than the other,the chances of not winning are maximum.

G) DISPLAY RESULTS AND PLAY AGAIN OPTION

Print a message indicating whether the player won or lost .Optionally reveal the correct number.Offer the player the choice to play the game again.If they choose to play again,generate a new random number

H) CODE TESTING

Test your game thoroughly,covering various scenarios such as valid and invalid inputs,winning and losing situations.
Document your code and add comments to explain key sections.This helps others(or yourself) understand the code later.
We could also consider adding simple graphics or messages to enhance the user interface.If we want to share our game,consider creating a standalone executable or sharing the python script.

I) TARGET AUDIENCE

The target audience for a simple number guessing game in python could be beginners or individuals looking for a casual and straightforward gaming experience.It's suitable for those who want a quick and entertaining activity without complex gameplay mechanics.

Key features:

- **Ease of use:**

  The game should have a simple interface with clear instructions,making it accessible to users with varying levels of familiarity with python.

- **Engaging Gameplay:**

  The core gameplay involves guessing a number, creating a low entry barrier.It's engaging enough to keep the player interested but not overly complicated.

- **Educational values:**

For beginners, the game serves as a practical exercise in basic python programming,involving concepts like user input,conditionals,loops,and random number generation.

- ## How to reach the Audience

1. Online platform
2. Educational platform
3. Github
4. Documentation and Tutorials
5. Word of mouth

- **What the game shows:**

The game showcases the simplicity and versatility of python for game development.It demonstrates fundamental programming concepts in a fun and interactive way.Additionally,it highlights the iterative process of coding,testing,and refing-a crucial ascept of programming.