

A
Summer Training Report
On
“GUESS THE NUMBER”

Submitted in partially fulfilment for the requirement for the award of the degree
of

Bachelor of Technology

in

Computer Science

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Session-2023-2024

Vision of the Department

To be a center of excellence in the field of Computer Science and Engineering for producing talented engineers to ethically serve constantly changing needs of society and industry throughout their career and life.

Mission of the Department

M1. Accomplish excellence with committed faculty by providing theoretical foundation and practical skills for solving complex engineering problems in the state-of-the-art trends in Computer science and allied disciplines.

M2. To foster skills and competency, generating novel ideas, entrepreneurship and model creations focused towards deep knowledge, interpersonal skills and leadership.

M3. To develop habitude of research among faculty and students in the area of Computer Science & Allied disciplines by providing the desired environment, for addressing the needs of industry and society.

M4. To mould the students with ethical principles in thoughts, expression and deeds.

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Chapter-1

Introduction

Introduction to "Guess the Number" Game Developed in Python:

In the realm of programming and gaming, "Guess the Number" stands as a fundamental yet engaging endeavor, offering both novices and seasoned coders alike a gateway into the world of interactive software development. Created using the versatile Python programming language, this rendition of "Guess the Number" epitomizes the fusion of simplicity and computational logic, inviting players to embark on a journey of numerical exploration and deduction.

At its core, "Guess the Number" challenges players to decipher a concealed numerical value within a specified range, employing a series of strategic guesses and logical deductions. Through intuitive user interfaces and responsive feedback mechanisms, the game cultivates an immersive and dynamic experience, drawing players into a world where intuition and algorithmic reasoning converge.

This report endeavors to explore the intricacies of "Guess the Number" from a programming perspective, shedding light on the underlying algorithms, data structures, and user interactions that define its functionality. Through detailed analysis and code walkthroughs, we aim to demystify the process of game development in Python, offering insights into the principles of software design and implementation.

Furthermore, we examine the educational and practical implications of creating and playing "Guess the Number" in Python, highlighting its potential as a pedagogical tool for teaching programming concepts such as conditionals, loops, and user input handling. By engaging with the game's source code and mechanics, aspiring developers can gain valuable insights into the iterative process of software development and the iterative refinement of algorithms.

As we navigate through the intricacies of "Guess the Number" in Python, we invite readers to embark on a journey of exploration and discovery, uncovering the synergies between computational logic and human intuition.

Through hands-on experimentation and critical analysis, we aim to inspire a

deeper appreciation for the art and science of game development, while empowering individuals to unleash their creativity and problem-solving skills in the digital domain.

Join us as we unravel the mysteries, decode the algorithms, and embrace the boundless potential of "Guess the Number" in Python. Through its interactive and immersive gameplay, this game serves as a testament to the enduring allure of programming and the limitless possibilities of human-computer interaction.

In the ever-evolving landscape of digital entertainment and software innovation, few creations capture the essence of interactive engagement and computational ingenuity quite

like the classic game of "Guess the Number." Crafted with the versatile Python programming language, this iteration of the timeless pastime serves as a beacon of creativity and technical prowess, inviting players to immerse themselves in a world where logic meets intuition.

"Guess the Number" transcends the boundaries of age and experience, offering a simple yet captivating premise: unravel the mystery of a concealed numerical value within a defined range through a series of strategic guesses and deductive reasoning. As players embark on this exhilarating journey of numerical exploration, they are greeted by an interface that seamlessly merges functionality with user experience, fostering an environment of anticipation and discovery.

In this report, we embark on a comprehensive exploration of "Guess the Number" from both a technical and experiential standpoint, delving deep into its underlying architecture, algorithmic intricacies, and player interactions. Through detailed examinations of code snippets and algorithmic workflows, we unveil the inner workings of the game, shedding light on the elegant fusion of Python syntax and game mechanics that underpin its immersive gameplay.

Beyond its role as a source of entertainment, "Guess the Number" in Python serves as a gateway to the world of programming, offering learners and enthusiasts a hands-on introduction to key concepts and methodologies.

From the principles of procedural logic to the nuances of variable

manipulation and control flow, the game provides a fertile ground for experimentation and skill development, empowering individuals to cultivate their coding prowess in a dynamic and engaging manner.

As we navigate the intricate pathways of "Guess the Number" in Python, we invite readers to embark on a journey of exploration and discovery, uncovering the myriad possibilities that lie at the intersection of technology and creativity. Through interactive engagement and iterative refinement, participants are encouraged to embrace the challenges of problem-solving, forging a deeper connection with the principles of computational thinking and algorithmic design.

Join us as we unravel the mysteries, decode the algorithms, and celebrate the enduring legacy of "Guess the Number" in Python. Through its immersive gameplay and educational value, this game stands as a testament to the boundless potential of software development as a medium for both expression and exploration, inviting enthusiasts of all backgrounds to partake in the joy of digital discovery.

Chapter-2 Requirement

Software Requirements of "Guess the Number" Game:

Software Required:

- Operating System :-window 10
- Language :-Pyhton.
- Database :-MySQL.

Hardware Required:

- System:-Pentium I3 Processor.
- Hard Disk:- 500 GB.
- Monitor :-Standard LED Monitor.
- Input Device :-Keyboard.
- Ram :-200MB.

Chapter-3

Conceptual Background

Technology Covered During Summer Training:

In the realm of data science, Python has emerged as a preeminent programming language, offering a versatile and powerful platform for data analysis, machine learning, and statistical modeling. With its intuitive syntax, rich ecosystem of libraries, and vibrant community support, Python has become the language of choice for data scientists, statisticians, and analysts worldwide. In this comprehensive overview, we delve into the symbiotic relationship between Python and data science, exploring its fundamental principles, key libraries, and real-world applications across various domains.

Introduction to Python for Data Science:

Python's ascendancy in the field of data science can be attributed to several factors, including its readability, flexibility, and ease of use. Unlike traditional statistical software, Python offers a dynamic and interactive environment that encourages exploration and experimentation. With its straightforward syntax and extensive library support, Python enables data scientists to tackle complex analytical challenges with confidence and efficiency. From data manipulation and visualization to machine learning and predictive modeling, Python serves as a versatile toolkit for extracting insights and driving innovation in the age of big data.

Key Libraries and Frameworks:

Central to Python's dominance in data science are its rich ecosystem of libraries and frameworks, which provide specialized tools and utilities for a wide range of tasks. Among the most prominent libraries are:

NumPy: NumPy is a fundamental library for numerical computing in Python, providing support for multidimensional arrays, mathematical functions, and linear algebra operations. With its efficient array operations and intuitive syntax, NumPy forms the foundation for many data manipulation and analysis tasks.

Pandas: Pandas is a powerful data manipulation library that simplifies the handling and analysis of structured data. Leveraging data structures such as DataFrames and Series, Pandas enables users to perform operations such as data cleaning, transformation, aggregation, and visualization with ease and efficiency.

Matplotlib and Seaborn: Matplotlib and Seaborn are essential visualization libraries that facilitate the creation of insightful charts, plots, and graphs. With their intuitive interfaces and extensive customization options, these libraries empower data scientists to communicate complex findings effectively and engage stakeholders through compelling visual narratives.

Scikit-learn: Scikit-learn is a comprehensive machine learning library that provides implementations of various algorithms for classification, regression, clustering, dimensionality reduction, and model evaluation. By encapsulating best practices and algorithms within a unified framework, Scikit-learn accelerates the development and deployment of machine learning models, making advanced analytics accessible to practitioners of all skill levels.

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Real-world Applications:

The versatility and scalability of Python in data science are exemplified by its wide-ranging applications across industries and domains. From finance and healthcare to marketing and social sciences, Python serves as a catalyst for innovation and discovery, enabling organizations to derive actionable insights and drive informed decision-making. Some notable applications include:

Predictive Analytics: Python facilitates the development of predictive models for forecasting future trends, identifying patterns, and mitigating risks across various domains, including finance, retail, and healthcare.

Natural Language Processing (NLP): Python's NLP libraries, such as NLTK (Natural Language Toolkit) and spaCy, empower organizations to extract valuable insights from unstructured text data, automate text processing tasks, and develop sophisticated language models for sentiment analysis, information retrieval, and text summarization.

Image Processing and Computer Vision: Python's libraries, including OpenCV and scikit-image, enable researchers and engineers to analyze and interpret digital images and videos, extract features, and develop advanced computer vision applications for object detection, image segmentation, and facial recognition.

Recommender Systems: Python's collaborative filtering algorithms and recommendation engines enable businesses to personalize user experiences, enhance

customer engagement, and optimize product recommendations in e-commerce platforms, streaming services, and social media platforms.

Chapter-4 Implementation

4.1 Coding:

```
import random

print('-----')

print('    GUESS THE NUMBER    ')

print('-----')

randomNumber = random.randint(1, 20)

totalGuess = 0

while True:

    userInput = int(input('Enter a Number between 0 to 20: '))

    totalGuess += 1

    if userInput > 20 or userInput < 1:

        print('Invalid Input')

        print()

        totalGuess -= 1

        continue

    elif userInput == randomNumber:

        print('Congrats!! You Guessed it RIGHT.')
```



```
print("Your Score: ", totalGuess)

print()

option = 0;

while True:

    print('-----')

    print()

    print('01. Play Again')
```

```

    print('02. Exit')

    print()

    option = int(input('Enter Option: '))

    if option == 1 or option == 2:

        break

    else:

        print('Invalid Input')

        print()

        continue

if option == 1:

    randomNumber = random.randint(1, 20)

    totalGuess = 0

    print()

    continue

elif option == 2:

    print()

    print('-----')

    break

print("Your Score: ", totalGuess)

print()


option = 0;

while True:

    print('-----')

    print()

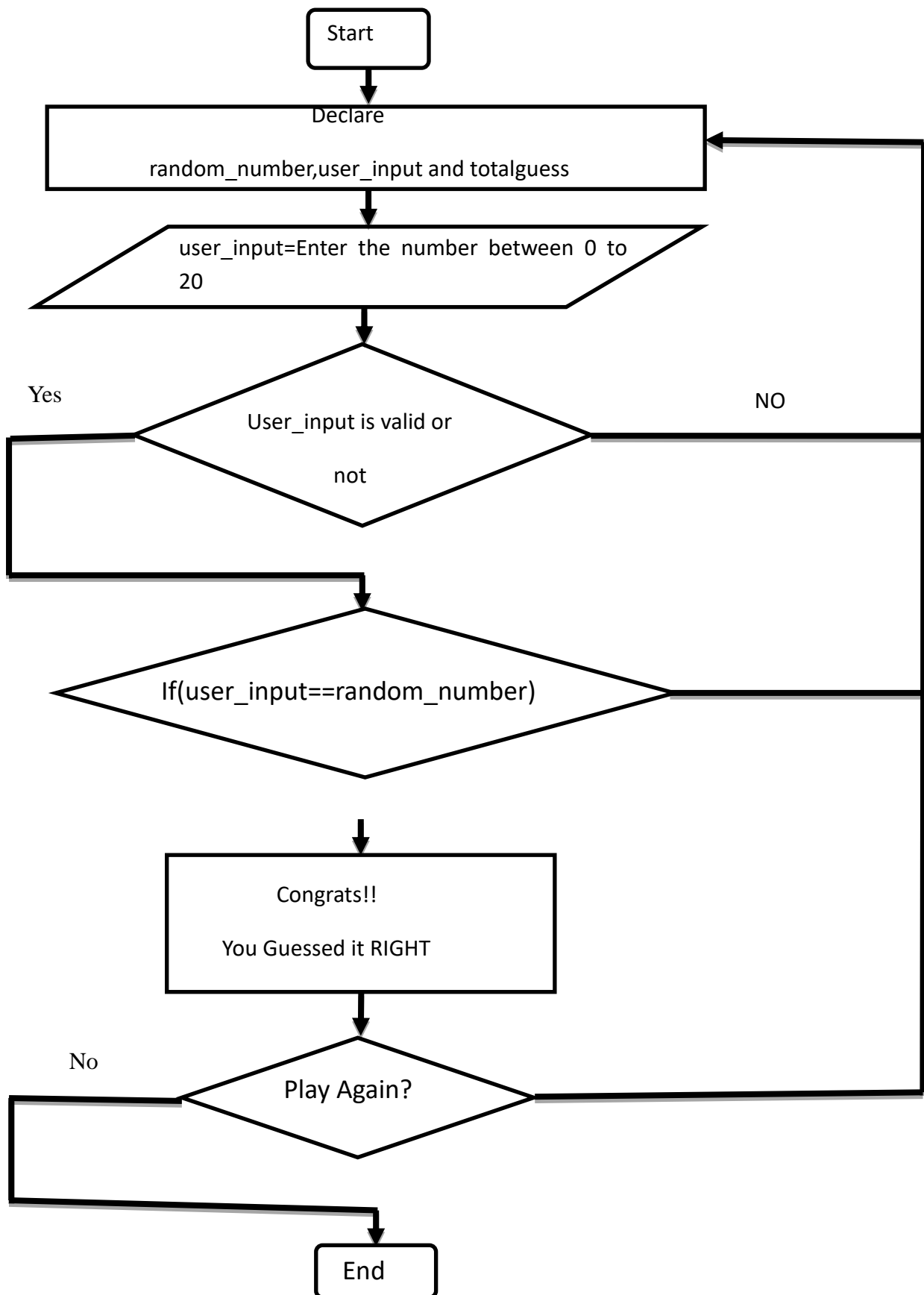
    print('01. Play Again')

    print('02. Exit')

```

```
        print()
elif userInput > randomNumber:
    print('Too High')
    print()
    continue
else:
    print('Too Low')
    print()
    continue
```

4.2 Flow Chart:



Chapter-5

User Interfaces

```
-----  
                GUESS THE NUMBER  
-----  
Enter a Number between 0 to 20: 11  
Too Low  
  
Enter a Number between 0 to 20: 15  
Too High  
  
Enter a Number between 0 to 20: 14  
Too High  
  
Enter a Number between 0 to 20: 13  
Congrats!! You Guessed it RIGHT.  
Your Score:  4  
  
-----  
  
01. Play Again  
02. Exit  
  
Enter Option: 2  
  
-----  
  
...Program finished with exit code 0  
Press ENTER to exit console.█
```

Fig: 5.1:

The player successfully guessed the correct number (13) after 3 attempts in the "Guess the Number" game. The program now offers the options to play again or exit, and the player chose to exit.

Chapter-6

Future Scope

In its current iteration, the "Guess the Number" game serves as a foundation for a comprehensive overhaul, introducing a plethora of features to create a more engaging, educational, and visually appealing experience.

Difficulty Levels and Customization: Implementing difficulty levels ranging from easy to hard enhances the game's accessibility to players of varying skill levels. The ability to customize settings allows users to tailor the game to their preferences, fostering a personalized and inclusive gaming experience.

Graphical User Interface (GUI): Introducing a GUI using libraries like Tkinter not only adds a visually appealing layer to the game but also improves user interaction. The GUI can incorporate vibrant designs, animations, and sound effects to elevate the overall gaming experience.

High Scores, Statistics, and Multiplayer Modes: Tracking high scores and displaying statistics adds a competitive element to the game, motivating players to improve. The inclusion of multiplayer modes fosters friendly competition, enhancing the social aspect of the game.

Educational Elements: Incorporating hints related to guessed numbers introduces an educational aspect to the game, making it not only entertaining but also intellectually stimulating. This addition can engage players in a learning experience while they enjoy the game.

Mobile App Version: Creating a mobile app version makes the game accessible on smartphones, tapping into a broader audience. This enhances convenience, allowing users to enjoy the game anytime, anywhere, further increasing its popularity.

Achievements System: The introduction of an achievements system, complete with rewards and badges, adds a layer of motivation for players to explore various aspects of the game and achieve milestones, contributing to long-term engagement.

Narrative Elements and Quests: Adding a storyline or quests injects a narrative element into the game, providing players with a sense of purpose and progression. This can turn the simple guessing game into an immersive experience with a cohesive theme.

Machine Learning for Dynamic Difficulty: Experimenting with machine learning for dynamic difficulty adjustments based on user performance ensures that the game remains challenging yet enjoyable. This adaptive system enhances user satisfaction by catering to individual skill levels.

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Appendix

