DOCUMENTATION FOR PYTHON CODE

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Name of the Internship : Python

Level of the task done : Basic

Task Name : Number Guessing Game

Software Used : Python IDLE 3.11 64 bit

Number Guessing Game

This Python code implements a guessing game where the user tries to guess a random integer.

Features:

This code implements a number guessing game with the following features:

- **Player interaction:** Welcomes the player, asks for their name, and prompts them for guesses.
- **Random number generation:** Picks a random number between 1 and 200 for the player to guess.
- **Guess validation:** Ensures player guesses are between 1 and 200, handling invalid input gracefully.
- **Hint system:** Provides hints to the player based on how close their guess is to the chosen number.
- **Limited attempts:** The player has a maximum of 6 guesses to guess the correct number.
- **Win/lose conditions:** Determines if the player guesses the number correctly within the allowed attempts.
- **Replayability:** Asks the player if they want to play another round after each game.

Code Structure:

The code is well-structured using functions for modularity:

- **welcome_player():** Greets the player and gets their name.
- **pick_number():** Generates a random number for the game.
- **take_guess(name, guesses_taken):** Prompts the player for a guess, validates input, and returns the guess.
- **give_hint(guess, number):** Provides a hint based on the difference between the guess and the actual number.
- **play_game(name):** Runs the main game loop, including guess attempts, win/lose logic, and hints.
- **ask_replay():** Asks the player if they want to play again.

- **if __name__ == "__main__"::** Main block that executes the game logic.

Running the Application:

1. Save the code as a Python file (e.g., todo.py).
2. Open a terminal or command prompt and navigate to the directory where you saved the file.
3. Run the script using python todo.py.

Python Code:

```
import random

import time

def welcome_player():

    """Welcomes the player and asks for their name."""

    print("Welcome to the Number Guessing Game!")

    name = input("May I know your name? ")

    print(f"Hi {name}, let's play! I'm thinking of a number between 1 and 200.")

    return name

def pick_number():

    """Generates a random number between 1 and 200."""

    number = random.randint(1, 200)

    return number

def take_guess(name, guesses_taken):

    """Prompts the player for a guess, handles input exceptions, and provides feedback."""

    while True:

        try:
```

```
            guess = int(input(f"\nGuess #{guesses_taken + 1}: "))
            if 1 <= guess <= 200:
                return guess
            else:
                print("Your guess must be between 1 and 200. Please try again.")
        except ValueError:
            print("Invalid input. Please enter a number between 1 and 200.")
def give_hint(guess, number):
    """Offers a hint if the guess is not correct."""
    difference = abs(guess - number)
    if difference > 50:
        hint = "Much too " + ("high" if guess > number else "low")
    elif difference > 20:
        hint = "Quite a bit " + ("high" if guess > number else "low")
    elif difference > 10:
        hint = "A little " + ("high" if guess > number else "low")
    else:
        hint = "Very close!"
    return hint
def play_game(name):
    """Runs the game loop, tracks guesses, and determines the outcome."""
```

```
    number = pick_number()
    guesses_taken = 0
    max_guesses = 6
    while guesses_taken < max_guesses:
        guess = take_guess(name, guesses_taken)
        guesses_taken += 1
        if guess == number:
            print(f"\nCongratulations, {name}! You guessed the number in {guesses_taken} tries.")
            return True  # Indicate successful guess
        hint = give_hint(guess, number)
        print(f"{hint} Try again.")
    print(f"\nSorry, {name}. You ran out of guesses. The number was {number}.")
    return False  # Indicate failed guess
def ask_replay():
    """Asks the player if they want to play again."""
    while True:
        response = input("\nWould you like to play again? (yes/no) ").lower()
        if response in ("yes", "y", "no", "n"):
            return response == "yes" or response == "y"
        else:
            print("Invalid input. Please answer 'yes' or 'no'.")
```

```
if __name__ == "__main__":
    name = welcome_player()
    while True:
        if play_game(name):
            print("That was fun! Let's see if you can do it again.")
        else:
            print("Maybe next time you'll be luckier!")
        if not ask_replay():
            break
    print("\nThanks for playing! Come back again soon.")
```

Example Usage:

Welcome to the Number Guessing Game!
May I know your name? Harsha
Hi Harsha , let's play! I'm thinking of a number between 1 and 200.

Guess #1: 100
Quite a bit low. Try again.

Guess #2: 150
A little high. Try again.

Guess #3: 130
Very close! Try again.

Guess #4: 125
Congratulations, Alice! You guessed the number in 4 tries.

That was fun! Let's see if you can do it again.

Guess #1: 70
Much too low. Try again.

Guess #2: 120
Very close! Try again.

Guess #3: 115
Congratulations, Alice! You guessed the number in 3 tries.

Maybe next time you'll be luckier!

Would you like to play again? (yes/no) no

Thanks for playing! Come back again soon.

This example shows the game being played twice by a player named Alice. She guesses the number in 4 tries the first time and 3 tries the second time. The game then asks if she wants to play again, and she declines.