

# Number Guessing Game - Project Report

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**Course:** Python Essential

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## 1. The Problem

When learning programming, beginners need simple projects to practice what they learned. I wanted to make something interactive and fun that uses basic Python concepts like loops and if-else statements.

## 2. My Solution

I created a number guessing game. The computer thinks of a random number between 1 and 100, and the player has to guess it. The game gives hints like "too high" or "too low" to help the player.

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## 3. What the Game Does

- Picks a random number from 1 to 100
  - Takes the players guess
  - Says if the guess is too high or too low
  - Counts how many tries it took
  - Lets you play again if you want
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## 4. How I Planned It

First I thought about what the game needs:

1. Generate a random number
2. Ask user for their guess
3. Compare the guess with the number
4. Give hints
5. Repeat until they get it right
6. Show how many tries they took
7. Ask if they want to play again

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## 5. The Algorithm

Here is the basic flow:

```
Start the game
Show welcome message
Set play = yes
```

```
While player wants to play:
    Computer picks random number
    Set tries to 0
```

```
While not guessed correctly:
    Ask for guess
    Add 1 to tries
```

```
If guess is less than number:
    Say "Too low"
If guess is more than number:
    Say "Too high"
If guess equals number:
    Say "You won!"
    Show number of tries
```

```
Ask if they want to play again
```

```
Say thanks and end
```

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## 6. Building the Game

I used Python 3 for this project. Here's what I used:

### Python concepts:

- Variables (num, guess, tries)
- While loops (for game and guessing)
- If-else statements (for comparing)
- Input and print functions
- Random module (for random numbers)

The code is in one file called game.py. Its about 30 lines of code and easy to understand.

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## 7. Testing

I tested the game by playing it multiple times:

**Test 1** - Normal game

Played normally and guessed the number. It worked fine.

**Test 2** - Guessed on first try

Got lucky and guessed right immediately. Game showed 1 attempt. Good!

**Test 3** - Playing again

After winning, typed "yes" and game restarted. Worked perfectly.

**Test 4** - Saying no

After winning, typed "no" and game ended nicely.

Everything worked as expected!

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## 8. Problems I Faced

The main challenge was making sure the while loops worked correctly. At first I had some issues with the play again feature but I fixed it by checking for both "yes" and "y".

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## 9. What I Learned

This project helped me understand:

- How loops work in real programs
  - Using random numbers
  - Getting user input properly
  - Comparing values with if-else
  - How to plan a program before coding
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## 10. Future Ideas

If I work on this more, I could add:

- Different difficulty levels (1-50 for easy, 1-1000 for hard)
- A high score system
- Timer to make it challenging

- Better looking interface
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## Conclusion

I successfully made a working number guessing game using basic Python. It was a good learning experience and I understand loops and conditionals much better now. The game is simple but demonstrates important programming concepts.

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## Files Included

- game.py - the game code
  - README.md - documentation
  - screenshots - pictures of game running
  - report.pdf - this report
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## End of Report