“Guess the Number”

Invent Your Own Computer Games with Python

Introduction (1/2)

- **The "Guess the Number" Game**
- **Code Explanation**
  - Arguments
  - Blocks
  - Conditions and Booleans
  - `if` statements

Introduction (2/2)

- **Code Explanation - Step by step**
  - Make Minor Changes
  - What Exactly is Programming?
  - A Web Page for Program Tracing
- **Topics Covered In This Chapter**

The "Guess the Number" Game

- **"Guess the Number" Game**
  - **Computer** will think of a **random number from 1 to 20.**
  - Ask you to **guess the number.**
    - You only get **six guesses.**
    - but the computer will tell you if your guess is **too high or too low.**
  - If you guess the number **within six tries, you win.**

The "Guess the Number" Game

- Sample Run of "Guess the Number"

```
Hello! What is your name?
Albert
Well, Albert, I am thinking of a number between 1 and 20.
Take a guess.
```

The "Guess the Number" Game

- Sample Run of "Guess the Number"

```
Hello! What is your name?
Albert
Well, Albert, I am thinking of a number between 1 and 20.
Take a guess.
10
Your guess is too high.
Take a guess.
```

The "Guess the Number" Game

- Sample Run of "Guess the Number"

```
Hello! What is your name?
Albert
Well, Albert, I am thinking of a number between 1 and 20.
Take a guess.
10
Your guess is too high.
Take a guess.
2
Your guess is too low.
Take a guess.
```

The "Guess the Number" Game

- Sample Run of "Guess the Number"

```
Hello! What is your name?
Albert
Well, Albert, I am thinking of a number between 1 and 20.
Take a guess.
10
Your guess is too high.
Take a guess.
2
Your guess is too low.
Take a guess.
4
Good job, Albert! You guessed my number in 3 guesses!
```

Building Blocks

- **The `random.randint()` Function**

```
number = random.randint(1, 20)
```

  - store the return value in a variable named `number`.
  - **`randint()`** function is provided by the random module.
    - » we precede it with **random.**
    - » will return a random integer.
      - between the **two integers** we give it. (separated by a comma)
      - here, It should return an integer between **1 and 20**.

Building Blocks

- Type **`import random`** to import the random module.

```
>>> import random
>>> random.randint(1, 20)
12
>>> random.randint(1, 20)
18
>>> random.randint(1, 20)
3
>>> random.randint(1, 20)
18
>>> random.randint(1, 20)
7
```

```
>>> random.randint(1, 4)
3
>>> random.randint(1, 4)
4
>>> random.randint(1000, 2000)
1294
>>> random.randint(1000, 2000)
1585
```

Building Blocks

Quiz

```
>>> random.randint(373, 212)
>>>
```

```
>>> random.randint(500)
>>>
```

```
>>> random.randint(0, 1)
>>>
```

```
>>> random.randint(1.0, 10.0)
>>>
```

Building Blocks

- **`While` statement**

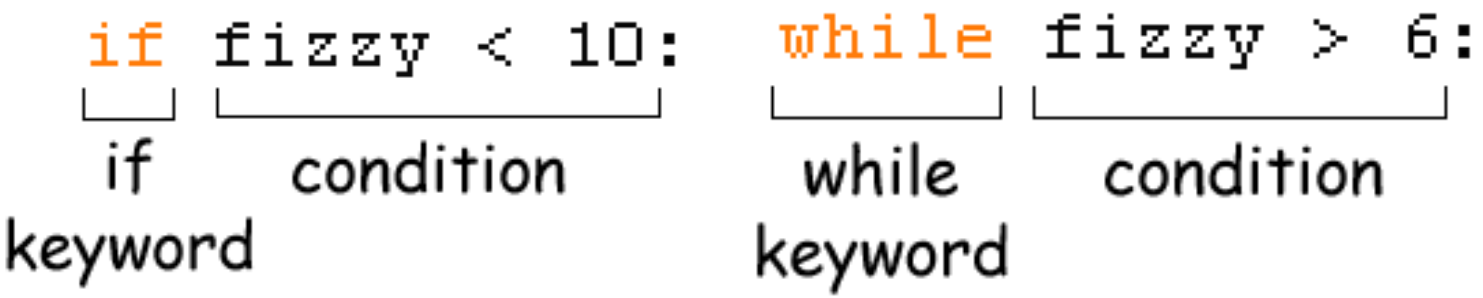
```
while guessesTaken < 6:
```

  - Is made up of the **`while` keyword**, followed by **an expression**, followed by **a colon(the : sign).**

- **Condition**
  - **The expression** next to the while keyword is also called a condition.

Building Blocks

- `if` statements
  - works almost the same way as a `while` statement.
  - But **unlike** the `while`-block
    - It just continues on down to the next line.
    - In other words, if statements won't loop.



```
# This is a guess the number game.
import random

guessesTaken = 0

print 'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)
print 'Well, ' + myName + ', I am thinking of a number between 1 and 20.'

while guessesTaken < 6:
    print 'Take a guess.' # There are four spaces in front of print.
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.' # There are eight spaces in front of print.

    if guess > number:
        print'Your guess is too high.'

    if guess == number:
        break

if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in ' + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

The “Guess the Number” Game

- Guess the Number's Source Code

```
1. # This is a guess the number game.
2. import random
3.
4. guessesTaken = 0
5.
6. print 'Hello! What is your name?'
7. myName = raw_input()
8.
9. number = random.randint(1, 20)
10. print 'Well, ' + myName + ', I am thinking of a number between
    1 and 20.'
11.
12. while guessesTaken < 6:
13.     print 'Take a guess.' # There are four spaces in front of
                                print.
14.     guess = raw_input()
15.     guess = int(guess)
16.
17.     guessesTaken = guessesTaken + 1
```

The “Guess the Number” Game

- Guess the Number's Source Code

```
18.
19.     if guess < number:
20.         print 'Your guess is too low.'
21.
22.     if guess > number:
23.         print 'Your guess is too high.'
24.
25.     if guess == number:
26.         break
27.
28. if guess == number:
29.     guessesTaken = str(guessesTaken)
30.     print 'Good job, ' + myName + '! You guessed my number in '
    +   guessesTaken + ' guesses!'
31.
32. if guess != number:
33.     number = str(number)
34.     print 'Nope. The number I was thinking of was ' + number
```

Code Explanation

- **Comment**
  - Just reminds us what this program does.

```
1. # This is a guess the number game.
```

- **Modules**
  - Other programs that contain other functions that we can use.

- **`Import` statement**
  - Will **add modules** and **their functions** to our program.
  - Is made up of the **`import` keyword** followed by the **module name.**

```
2. import random
```

Code Explanation

- This creates a **new variable**
  - We will store the integer 0 here.

```
4. guessesTaken = 0
```

- These two lines are **identical to Hello World program**.

```
6. print 'Hello! What is your name?'
7. myName = raw_input()
```

Code Explanation

- We can **change the game's code** slightly.

```
9. number = random.randint(1, 20)
10. print 'Well, ' + myName + ', I am thinking of a number
    between 1 and 20.'
```

```
9. number = random.randint(1, 100)
10. print 'Well, ' + myName + ', I am thinking of a number
    between 1 and 100.'
```

Code Explanation

- **Arguments**
  - The values that are passed to a function when the function is called.

```
raw_input()
random.randint(1, 20)
```

  - The **`raw_input()`** function has **no arguments.**
  - The **`randint()`** function call has **two arguments.**
    - » Programmers say that the arguments are **delimited** by commas.

Code Explanation

- Quiz

```
>>> random.randint(1)
>>>
```

```
>>> random.randint(1, 2, 3)
>>>
```

Code Explanation

- **`Print` statement**

```
print 'Well, ' + myName + ', I am thinking of a
number between 1 and 20.'
```

  - The **plus signs** concatenate the three strings.
  - The **commas are *inside* the quotes,** and part of the strings themselves.

Code Explanation

- **`While` statement**

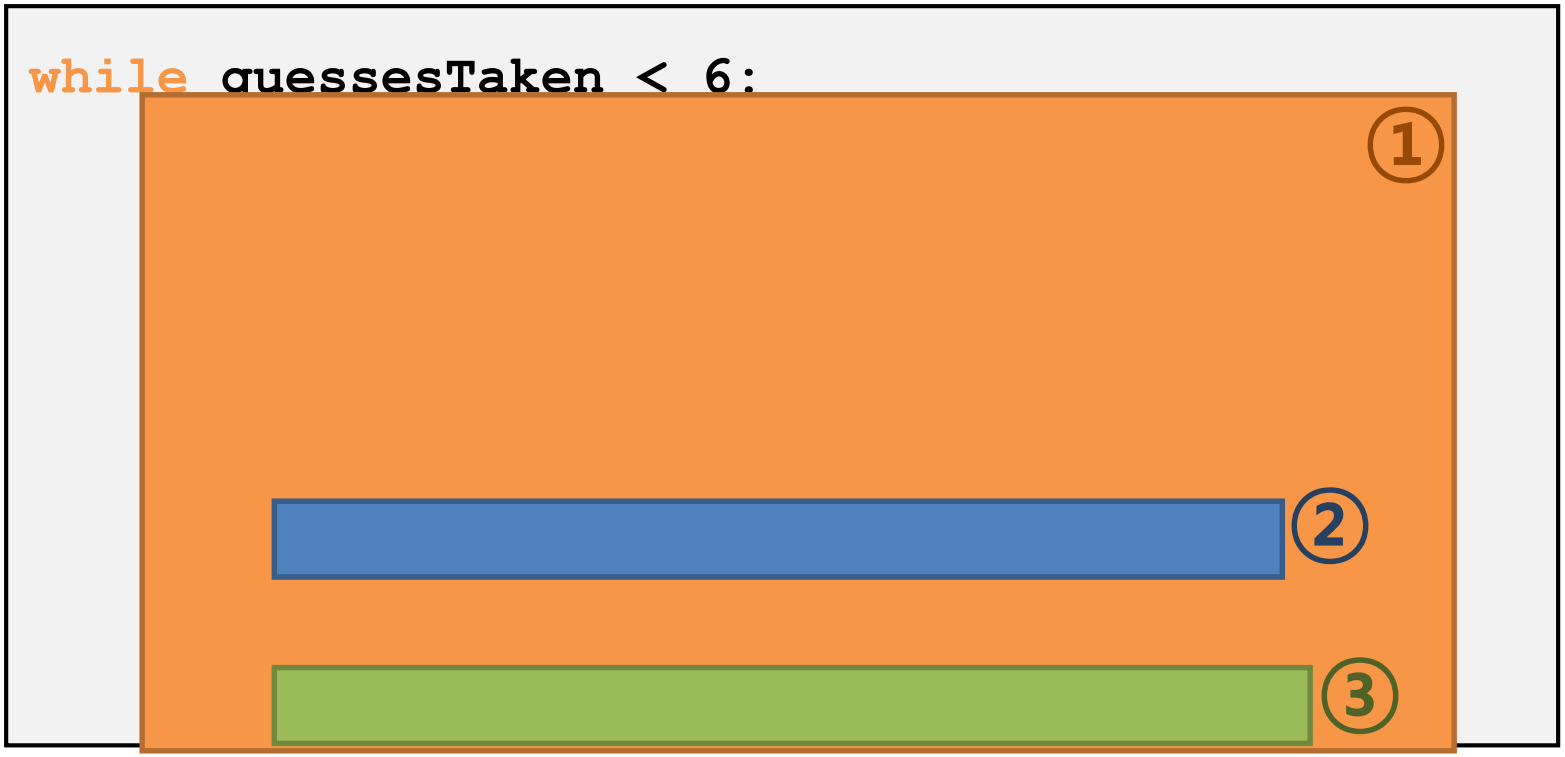
```
while guessesTaken < 6:
```

  - Is made up of the **`while` keyword**, followed by **an expression**, followed by **a colon(the : sign).**

- **Condition**
  - **The expression** next to the while keyword is also called a condition.

Code Explanation

- **Blocks**
  - A block is made up of several lines of code grouped together.



Code Explanation

- **Blocks**
  - where a **block begins and ends** by looking at the line's **indentation.**

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'
```

Code Explanation

- **Loop block**
  - Call the block after the `while` keyword a **loop block.**
    - also called a **while-block.**
    - If the condition is **true**
      - » Program enters the **loop block again.**
    - If the condition is **false**
      - » Program **jumps** down to the line **after the loop block.**

Code Explanation

- **Conditions and Booleans**

```
while guessesTaken < 6:
```

  - Called the expression that came after the `while` keyword the **condition.**
  - It contains **two values** connected by **an operator**
    - » **Two values**
      : variable `guessesTaken`, integer value 6
    - » **Operator**
      : the < sign, which is called the **"less than"** sign.

Code Explanation

- **Conditions and Booleans**
  - **Comparison operators.**

Operator Sign	Operator Name
<	**Less** than
>	**Greater** than
<=	**Less** than or **equal** to
>=	**Greater** than or **equal** to
==	**Equal** to
!=	**Not equal** to

Code Explanation

Conditions and Booleans

- **Boolean**

```
True
False
```

  - There are two and only **two values.**
  - Must type **`True`** of **`False`** (not **`true`** or **`fALSe`**).

- **Condition**
  - An expression that uses **comparison operators.**
  - Will always evaluate to a **boolean value.**

Code Explanation

- Type in the following conditions.

```
>>> 0 < 6
True
>>> 6 < 0
False
>>> 50 < 10
False
>>> 10 < 11
True
>>> 10 < 10
False
```

Code Explanation

- Quiz

```
>>> 0 > 6
>>> 6 > 0
>>> 10 > 10
>>> 10 == 10
>>> 10 == 11
>>> 11 == 10
>>> 10 != 10
>>> 10 != 11
>>> 'Hello' == 'Hello'
>>> 'Hello' == 'Good bye'
>>> 'Hello' == 'HELLO'
>>> 'Good bye' != 'Hello'
```

Code Explanation

- **Looping with `while` statements**
  - The while statement marks the beginning of a **loop.**
  - If the condition evaluates to **True**
    - » the execution **moves inside the while-block.**
  - If the condition evaluates to **False**
    - » the execution **moves all the way past the while-block.**

Code Explanation

- Looping with `while` statements

```
12. while guessesTaken < 6:
13.     print 'Take a guess.'
14.     guess = raw_input()
15.     guess = int(guess)
16.
17.     guessesTaken = guessesTaken + 1
18.
19.     if guess < number:
20.     print 'Your guess is too low.'
21.
22.     if guess > number:
23.     print 'Your guess is too high.'
24.
25.     if guess == number:
26.         break
27.
28. if guess == number:
```

If True… …go inside the loop-block to here.

If False… …go past the loop-block to here.

Code Explanation

- **The Player Guesses**
  - The program now asks us for a guess.
  - We store this guess in a variable named **`guess`**.

```
13.     print 'Take a guess.'
14.     guess = raw_input()
```

Code Explanation

- **`int()` Function**

```
15.     guess = int(guess)
```

  - Converting **Strings to Integers.**
  - The **`raw_input()`** function returned a string of text that player typed.
    - » But in our program, we will **want an integer.**
  - If the player enters 5 as their guess,
    - » will return the **string value '5'** and not the integer value 5.

Code Explanation

- Quiz

```
>>> int('42')
>>> int(42)
>>> int('hello')
>>> int('forty-two')
>>> int(' 42 ')
>>> 2 + int('2')
```

Code Explanation

- **Incrementing Variables**

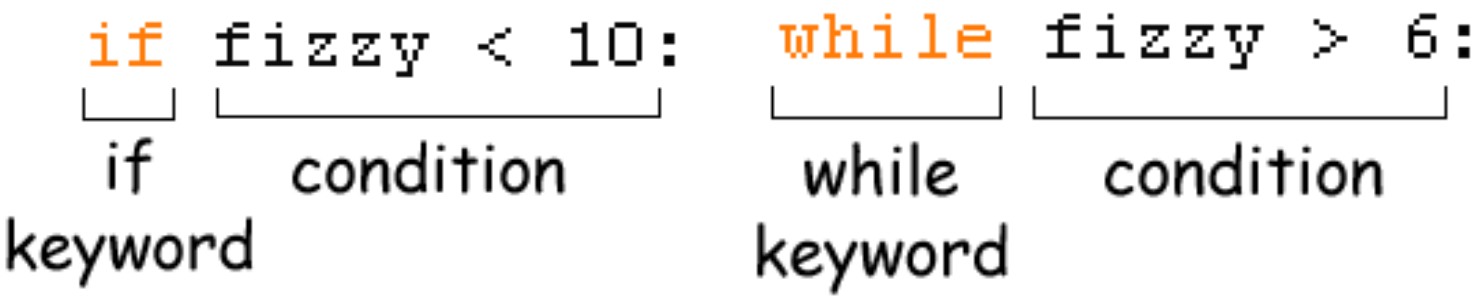
```
17.  guessesTaken = guessesTaken + 1
```

  - The first time that we enter the loop block
    - » `guessesTaken` has the value of 0.
    - » take this value and **add 1** to it (0 + 1 is 1).
    - » **store the new value of 1** to `guessesTaken`.

  - When we **subtract** one from a value
    - » we are **decrementing** the value.

Code Explanation

- `if` statements
  - works almost the same way as a `while` statement.
  - But **unlike** the `while`-block
    - It just continues on down to the next line.
    - In other words, if statements won't loop.



Code Explanation

- `if` statements
  - **Is the Player's Guess Too Low?**

```
19.     if guess < number:
20.         print 'Your guess is too low.'
```

  - If the condition evaluates to **True**
    - » then the code in the **if-block is executed.**
  - If the condition is **False**
    - » then the code in the **if-block is skipped.**

Code Explanation

- `if` statements
  - **Is the Player's Guess Too High?**

```
22.     if guess > number:
23.         print 'Your guess is too high.'
```

    - If the player's guess is **larger than the random integer**
      - » we **enter the `if`-block** that follows the `if` statement.
      - » The `print`line tells the player that their guess is too big.

Code Explanation

- **`break` Statement**

```
25.     if guess == number:
26.         break
```

  - if the **guess is equal to the random integer**
    - » we enter line 26, the `if`-block that follows it.

  - does not bother re-checking the `while` loop's condition.
    - » it just **breaks out immediately.**
    - » just the `break` keyword by itself, with no condition or colon.

Code Explanation

- **Check if the Player Won**

```
28. if guess == number:
29.     guessesTaken = str(guessesTaken)
30.     print 'Good job, ' + myName + '! You guessed
    my number in ' + guessesTaken + ' guesses!'
```

  - player **correctly guessed** the computer's number.

  - **function `str()`**
    - » how many guesses it took them.
    - » change the `guessesTaken` value into a string.

Code Explanation

- **Check if the Player Lost**

```
32. if guess != number:
33.       number = str(number)
34.       print 'Nope. The number I was thinking of was '
    + number
```

  - player **failed to guess** correctly.

  - **`str(number)`**

    » inside the if-block, and only executes if the condition was **`True`**.

  - we have reached the **end of the code**, and the program **terminates.**

순서도

순서도란

미리 정의된 기호와 연결선으로
프로그램의 흐름이나
처리과정을 표현

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미리 정의된 기호와 연결선으로
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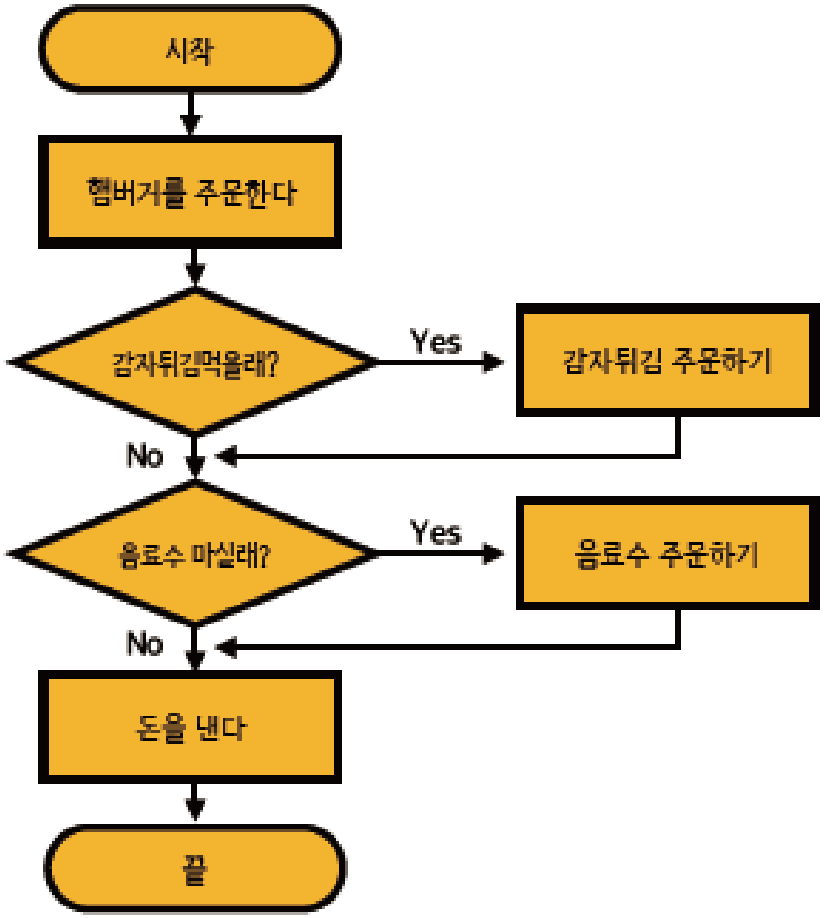
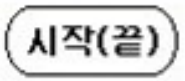
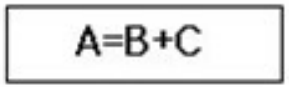
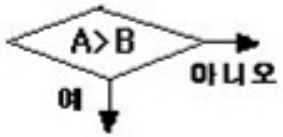
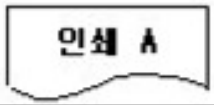
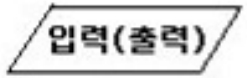


순서도

순서도의 기호

기호	기호의 설명	보기
	순서도의 시작이나 끝을 나타내는 기호	
	값을 계산하거나 대입 등을 나타내는 처리 기호	
	조건이 참이면 '예', 거짓이면 '아니오'로 가는 판단 기호	
	서류로 인쇄할 것을 나타내는 인쇄 기호	
	일반적인 입·출력을 나타내는 입·출력 기호	

순서도

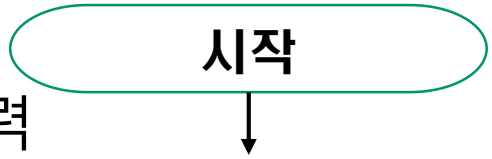
순서도 그리기

숫자를 두 개를 입력 받아 더한 결과를 출력

순서도

순서도 그리기

숫자를 두 개를 입력 받아 더한 결과를 출력



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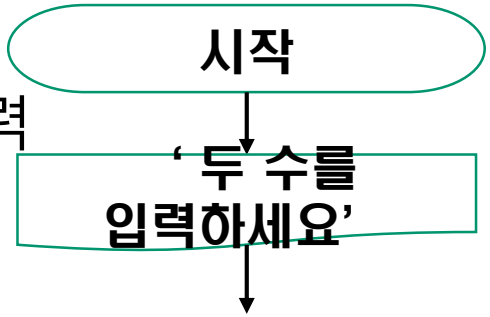

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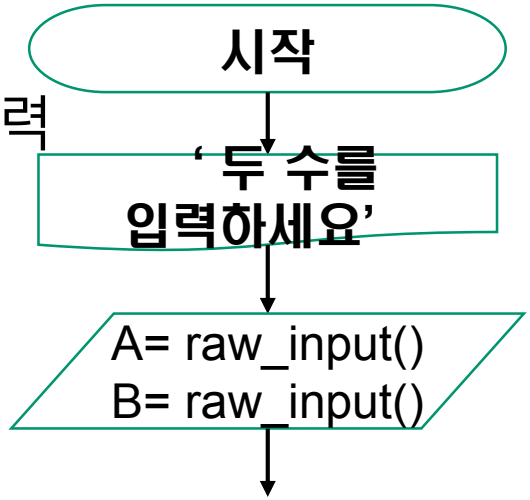

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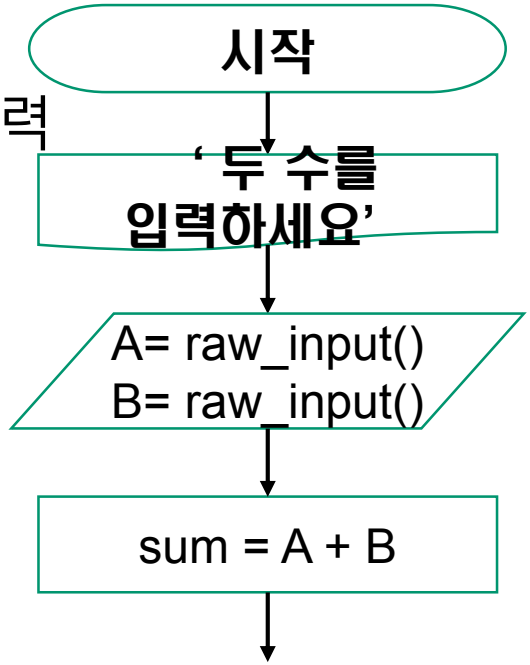
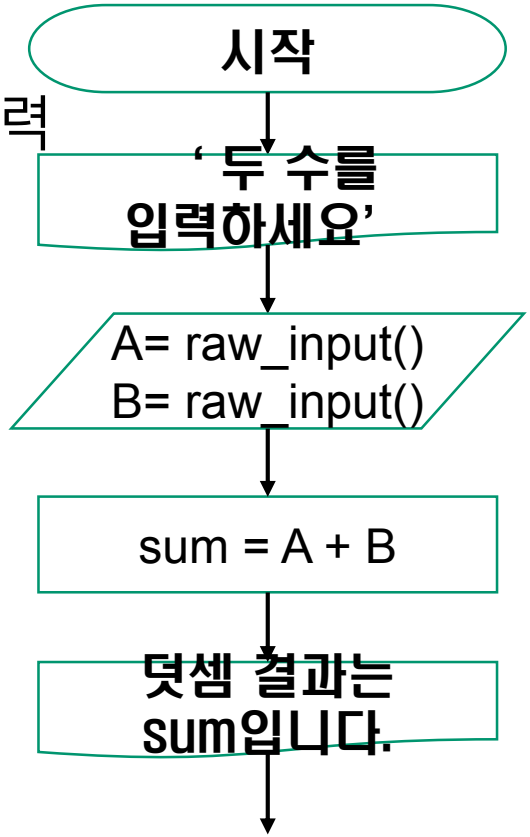


순서도

순서도 그리기

숫자를 두 개를 입력 받아 더한 결과를 출력

기호	기호의 설명
	순서도의 시작이나 끝을 나타내는 기호
	값을 계산하거나 대입 등을 나타내는 처리 기호
	조건이 참이면 '예', 거짓이면 '아니오'로 가는 판단 기호
	서류로 인쇄할 것을 나타내는 인쇄 기호
	일반적인 입·출력을 나타내는 입·출력 기호

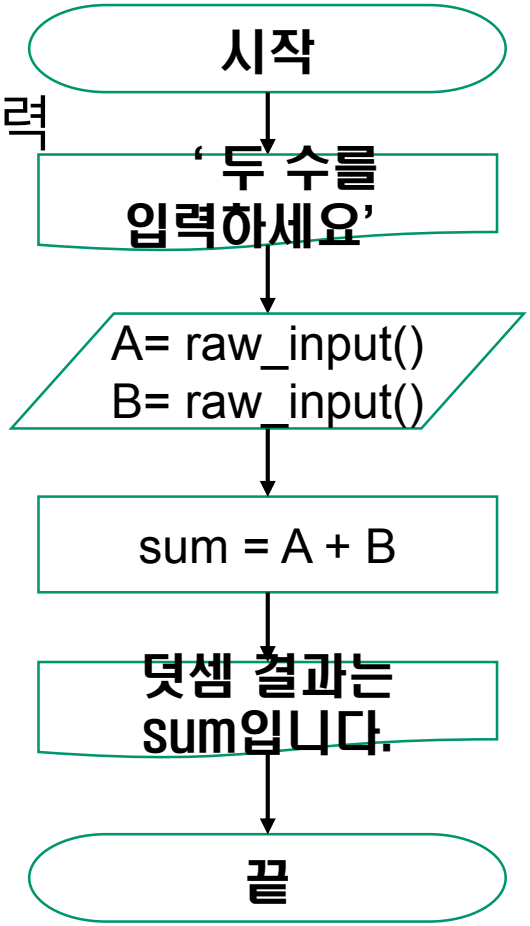


순서도

순서도 그리기

숫자를 두 개를 입력 받아 더한 결과를 출력

기호	기호의 설명
	순서도의 시작이나 끝을 나타내는 기호
	값을 계산하거나 대입 등을 나타내는 처리 기호
	조건이 참이면 '예', 거짓이면 '아니오'로 가는 판단 기호
	서류로 인쇄할 것을 나타내는 인쇄 기호
	일반적인 입·출력을 나타내는 입·출력 기호



Code Explanation – step by step

- **Tracing through the program.**
  - Let's go over the code one more time.
  - To help you understand everything.
  - Remember what the **values of variables** are ourselves.

Code Explanation – step by step

```
import random

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

```
# This is a guess the number game.

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

```
# This is a guess the number game.
import random

print'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

guessesTaken	0

```
# This is a guess the number game.
import random

guessesTaken = 0


myName = raw_input()

number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

guessesTaken	0

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'


number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

guessesTaken	0
myName	Bob

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'


number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

Code Explanation – step by step

guessesTaken	0
myName	Bob

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'

while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1
```

Code Explanation – step by step

guessesTaken	0
myName	Bob
number	8

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'

while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1
```

Code Explanation – step by step

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)

while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1
```

guessesTaken	0
myName	Bob
number	8

Code Explanation – step by step

guessesTaken	0
myName	Bob
number	8

```
# This is a guess the number game.
import random

guessesTaken = 0

print'Hello! What is your name?'
myName = raw_input()

number = random.randint(1, 20)
print'Well, ' + myName + ', I am thinking of a number between 1 and 20.'
```

```
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1
```

Code Explanation – step by step

```
while guessesTaken < 6:

    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	0
myName	Bob
number	8

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'

    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	0
myName	Bob
number	8
guess	'12'

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	0
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)
```

guessesTaken	0
myName	Bob
number	8
guess	12

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:


    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

        break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
print 'Take a guess.'
guess = raw_input()
guess = int(guess)

guessesTaken = guessesTaken + 1

if guess < number:
    print 'Your guess is too low.'

if guess > number:
    print 'Your guess is too high.'

if guess == number:
    break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:

    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	12

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'

    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	'6'

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	1
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)
```

guessesTaken	1
myName	Bob
number	8
guess	6

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:


    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

        break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
print 'Take a guess.'
guess = raw_input()
guess = int(guess)

guessesTaken = guessesTaken + 1

if guess < number:
    print 'Your guess is too low.'

if guess > number:
    print 'Your guess is too high.'

if guess == number:
    break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:

    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	6

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'

    guess = int(guess)

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	'8'

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()

    guessesTaken = guessesTaken + 1

    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	2
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)
```

guessesTaken	2
myName	Bob
number	8
guess	8

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

Code Explanation – step by step

```
while guessesTaken < 6:
    print 'Take a guess.'
    guess = raw_input()
    guess = int(guess)

    guessesTaken = guessesTaken + 1

        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	3
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break

if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	3
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

        print 'Your guess is too high.'

    if guess == number:
        break

if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	3
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

        break

if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	3
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
```

guessesTaken	3
myName	Bob
number	8
guess	8

```
if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break
```

guessesTaken	3
myName	Bob
number	8
guess	8

```
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break

if guess == number:

    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	'3'
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break

if guess == number:
    guessesTaken = str(guessesTaken)


if guess != number:
    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	'3'
myName	Bob
number	8
guess	8

Code Explanation – step by step

```
    if guess < number:
        print 'Your guess is too low.'

    if guess > number:
        print 'Your guess is too high.'

    if guess == number:
        break

if guess == number:
    guessesTaken = str(guessesTaken)
    print 'Good job, ' + myName + '! You guessed my number in '
    + guessesTaken + ' guesses!'

    number = str(number)
    print 'Nope. The number I was thinking of was ' + number
```

guessesTaken	3
myName	Bob
number	8
guess	8

Practice 1

```
Input first number.
5
Input second number.
7

Tell me what is 5+7
11
Wrong! The answer is 12

Tell me what is 5-7
-2
Correct!

Tell me what is 5*7
36
Wrong! The answer is 35
```

```
Input first number.
-3
Input second number.
7

Tell me what is -3+7
4
Correct!

Tell me what is -3-7
-11
Wrong! The answer is -10

Tell me what is -3*7
-21
Correct!
```

Practice 2

```
Input dan.
2
**********2dan**********
2*1=2
2*2=4
2*3=6
2*4=8
2*5=10
2*6=12
2*7=14
2*8=16
2*9=18
**************************
```

Things Covered In This Chapter(1/2)

- `import` statements
- Modules
- Arguments
- `while` statements
- Conditions
- Blocks
- Comparison operators

Things Covered In This Chapter(2/2)

- The difference between = and ==.
- `if` statements
- The `break` keyword.
- The `str()` function.
- The `random.randint()` function.