

# Hangman Game

Making Game with Python (1)

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# Class 1

- Review and test
- Check a letter in a string
- Hangman game flowchart
- choose\_word
- is\_word\_guessed
- get\_guessed\_word
- guess\_loop
- Hangman game

# Review

- `import time` module
- Escape character and multiline string
- User-defined function
- While loop
- Boolean operators: `and`, `or`, `not`

# Test

```
# find the bugs
A = 'It's a test'

# what will be printed
print('Welcome\nToday is Sunday')

def addition(x, y=0):
    ans = x + y
    return ans

print(addition(1, 2))
print(addition(1))
```

# Test

```
# find the bugs  
A = 'It's a test'
```

```
# what will be printed  
print('Welcome\nToday is Sunday')
```

```
def addition(x, y=0):  
    ans = x + y  
    return ans
```

```
print(addition(1, 2))  
print(addition(1))
```



```
# correction  
A = 'It\'s a test'  
A = "It's a test"
```

```
Welcome  
Today is Sunday
```

```
3  
1
```

# Test

# what will be printed

```
x = 5
while x > 0:
    print(x)
    x -= 1 # x = x-1
```

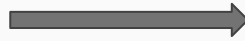
```
x = 5
while x: # Boolean(x) = False if x=0, x="" or x=[]. Otherwise True
    print(x)
    x -= 1
```

# Test

# what will be printed

```
x = 5
while x > 0:
    print(x)
    x -= 1
```

```
x = 5
while x:
    print(x)
    x -= 1
```



0==False



# what will be printed

5  
4  
3  
2  
1

5  
4  
3  
2  
1

# Check a item in a string

A = 'abcd'

print('c' in A)  True

print('e' in A)  False

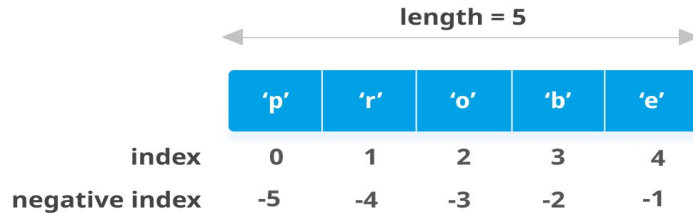
print('e' not in A)  True



# list

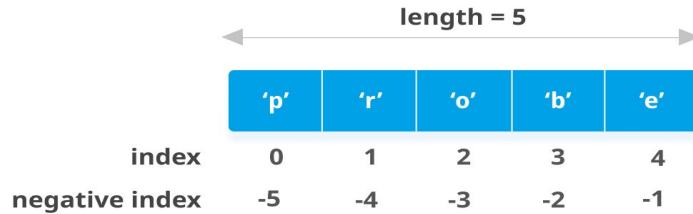
- A list is a collection which is ordered and changeable
- Syntax:
  - Square brackets: [ ... ]
- Create a list
  - `mylist = [1, 2, 5, 6]`
  - `mylist = ['a', 'b', 'apple']`
  - `mylist = ['a', 1, 'apple']`
  - `mylist = [[1,2], [3,4]]`
- Get the size of list
  - `len(mylist)`



# list: access items



- `mylist = ['p', 'r', 'o', 'b', 'e']`
- `print(mylist[0])`                      `'p'`
- `print(mylist[2])`                      `'o'`
- `print(mylist[-1])`                      `'e'`
- `print(mylist[0:2])`                      `['p', 'r']`

# list: change item



- `mylist = ['p', 'r', 'o', 'b', 'e']`
- `mylist[0] = 'a'`
- `print(mylist)`  `['a', 'r', 'o', 'b', 'e']`
- `mylist.append('t')`
- `print(mylist)`  `['a', 'r', 'o', 'b', 'e', 't']`

# list: for loop

```
a = list(range(6))
```

```
print(a)
```

```
for x in a:
```

```
    print(x)
```

# list and string

- `str1 = 'probe'`
- `list1 = list(str1)`
- `str1_1 = ''.join(list1)`



`['p', 'r', 'o', 'b', 'e']`  
`'probe'`

- `str2 = 'apple orange'`
- `list2 = str2.split(' ')`
- `str2_0 = ','.join(list2)`



`['apple', 'orange']`  
`'apple,orange'`

# Check a item in a list or string

```
A = [1, 2, 3, 4]
```

```
print(2 in A) → True
```

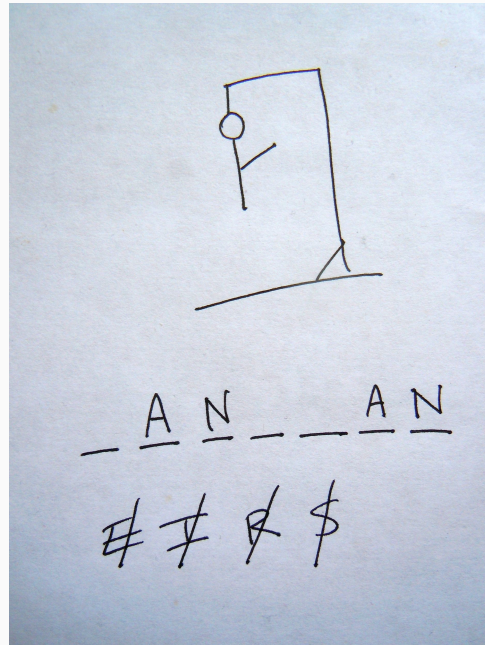
```
A=['a', 'b', 'c', 'd']
```

```
print('c' in A) → True
```

```
A = 'abcd'
```

```
print('c' in A) → True
```

# Hangman Game

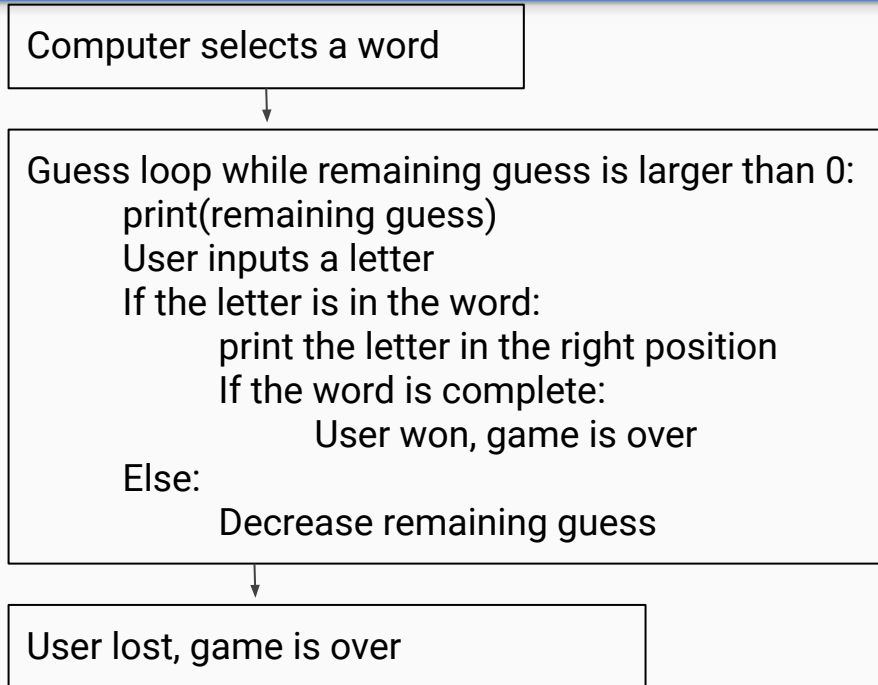


# demo





# Hangman Game Flowchart



# User-defined functions

```
import random

def choose_word():
    wordlist = 'ant bear cat dog beer'.split()
    print(wordlist)
    w = random.choice(wordlist)
    return w

def is_word_guessed(secret_word, letters_guessed):
    for x in secret_word:
        if x not in letters_guessed:
            return False
    return True

def get_guessed_word(secret_word, letter_guessed):
    word = ''
    for x in secret_word:
        if x in letter_guessed:
            word += x
        else:
            word += '_'
    return word
```

# Function test

```
from hangman_2020 import *

print(choose_word())
print(choose_word())

ans = is_word_guessed('beer', 'bre')
assert ans==True, 'fail'

ans = is_word_guessed('beer', 'br')
assert ans == False, 'fail'

ans = get_guessed_word('hangman', 'an')
assert ans == '_an__an', 'fail in get_guessed_word'
```

# Guess loop and other

```
def guess_loop(secret_word, max_guess):
    guessed = ''
    while max_guess > 0:
        print(f'You have {max_guess} guesses left')
        letter = input('Please guess a letter: ').lower()
        if letter in secret_word:
            if letter in guessed:
                print('That letter has already been guessed')
                continue
            else:
                guessed += letter
                guessed_word = get_guessed_word(secret_word, guessed)
                print(f'Good guess: {guessed_word}')
                if is_word_guessed(secret_word, guessed):
                    print('Congrats, You won\n')
                    return
        else:
            guessed_word = get_guessed_word(secret_word, guessed)
            print(f'Oops. That letter is not in my word: {guessed_word}')
            max_guess -= 1

    print('Sorry, you ran out of guesses.')

def hangman(max_guess):
    secret_word = choose_word()
    print("Welcome the game")
    guess_loop(secret_word, max_guess)

if __name__ == '__main__':
    hangman(4)
```

# Function test

```
from hangman_2020 import *

print(choose_word())
print(choose_word())

ans = is_word_guessed('beer', 'bre')
assert ans==True, 'fail'

ans = is_word_guessed('ant', 'an')
assert ans == False, 'fail'

ans = get_guessed_word('banana', 'a')
assert ans == '_a_a_a_', 'fail in get_guessed_word'

guess_loop('dog', 3)
```

# Add visualization:

- List
- HANGMANPICS
- Hangman game with HANGMANPICS

# HANGMANPICS

- HANGMANPICS is a list of multi-line string
- `from hangman_pictures import HANGMANPICS`

([github.com/zhihongzeng2002/pythongame/tree/master/1](https://github.com/zhihongzeng2002/pythongame/tree/master/1): hangman\_pictures.py)

# Code change

```
def guess_loop_2(secrete_word, pictures): ###
    guessed = ''
    max_guess = len(pictures)    ###
    while max_guess > 1: ###
        print(f'You have {max_guess-1} guesses left')
        print(pictures[-max_guess])    ###
        letter = input('Please guess a letter: ').lower()
        if letter in secrete_word:
            if letter in guessed:
                print('That letter has already been guessed')
                continue
            else:
                guessed += letter
                guessed_word = get_guessed_word(secrete_word, guessed)
                print(f'Good guess: {guessed_word}')
                if is_word_guessed(secrete_word, guessed):
                    print('Congrats, You won\n')
                    return
        else:
            guessed_word = get_guessed_word(secrete_word, guessed)
            print(f'Oops. That letter is not in my word: {guessed_word}')
            max_guess -= 1

    print(pictures[-1]) ###
    print(f'Sorry, you ran out of guesses. My secrete word is {secrete_word}') ###
```



# Code change

```
def hangman_2(pictures): ###
    secrete_word = choose_word()
    print("Welcome the game")
    guess_loop_2(secrete_word, pictures) ###

if __name__ == '__main__':
    # hangman(num_pics) ###
    hangman_2(HANGMANPICS) ###
```