

Problem-Based Learning

Python 3

Lecture: 02-if & while

Online Python

- <https://www.programiz.com/python-programming/online-compiler/>

Lecture Notes

- <https://web.phy.ntnu.edu.tw/~hongyi/?url=notes>



條件句

- Write a program to prompt for a score. Print a grade using the following table:

Score Grade ≥ 0.9 A

≥ 0.8 B

≥ 0.7 C

≥ 0.6 D

< 0.6 F

- 顯示提示
- 輸入數字
- 判斷範圍
- 顯示結果

判斷 if

- `a = 0.95`
- `if a >= 0.9:`
- `print("A")`
- `A`

判斷 if ... else ...

- `a = 0.85`
- `if a >= 0.9:`
- `print("A")`
- `else:`
- `print("F")`
- `F`

判斷 if ... elif ... else ...

- `a = 0.85`
- `if a >= 0.9:`
- `print("A")`
- `else:`
- `if a >= 0.8:`
- `print("B")`
- `else:`
- `print("F")`

- `a = 0.85`
- `if a >= 0.9:`
- `print("A")`
- `elif a >= 0.8:`
- `print("B")`
- `else:`
- `print("F")`

判斷 if ... elif ... else ...

- a = 0.75
- if a >= 0.9:
- print("A")
- elif a >= 0.8:
- print("B")
- elif a >= 0.7:
- print("C")
- else:
- print("F")
- C

Problem (自我練習)

- Write a program to prompt for a score between 0.0 and 1.0. **First check: if the score is out of range, print an error message.** Then if the score is between 0.0 and 1.0, print a grade using the following table:

Score Grade ≥ 0.9 A

≥ 0.8 B

≥ 0.7 C

≥ 0.6 D

< 0.6 F

- 顯示提示
- 輸入數字
- 第一步先判斷範圍
 $0.0 \leq x \leq 1.0$
- 第二步判斷成績
A, B, C, D, F
- 顯示結果

Solution

- `C = input("Enter score := ")`
- `try:`
- `a = float(C)`
- `if a > 0.0 and a < 1.0:`
- `if a >= 0.9:`
- `print("A")`
- `elif a >= 0.8:`
- `print("B")`
- `elif a >= 0.7:`
- `print("C")`
- `elif a >= 0.6:`
- `print("D")`
- `else:`
- `print("F")`
- `else:`
- `print("Bad score")`
- `except:`
- `print("Not a number!")`

Problem

- Write a program to repeatedly prompt for a score between 0.0 and 1.0. until the user enters “done”. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print a grade using the following table:

Score	Grade
≥ 0.9	A
≥ 0.8	B
≥ 0.7	C
≥ 0.6	D
< 0.6	F

- 重覆顯示提示

條件式迴圈 while

- `a = 0.95`
- `while a >= 0.9:`
- `print("A")`

- A
- A
- A
- A
- A
- A
- A
- A
- A

條件式迴圈 while ... break

- `a = 0.95`
- `while a >= 0.9:`
- `print("A")`
- `break`
- `A`

條件式迴圈 while

- while True:
- C = input("Enter score (or 'done' to finish) := ")
- if C.lower() == "done":
- break
- C = float(C)
- print(C)

Problem (自我練習)

- Write a program to repeatedly prompt for a score between 0.0 and 1.0. until the user enters “done”. Once “done” is entered, print out the total, count, and average of the numbers. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print a grade using the following table:

Score	Grade
≥ 0.9	A
≥ 0.8	B
≥ 0.7	C
≥ 0.6	D
< 0.6	F

Solution

```
• N = 0
• sum = 0
• while True:
•     C = input("Enter score (or 'done' to finish) := ")
•     if C.lower() == "done":
•         break
•     try:
•         a = float(C)
•         if a > 0.0 and a < 1.0:
•             N = N + 1
•             sum = sum + a
•             if a >= 0.9:
•                 print("A")
•             elif a >= 0.8:
•                 print("B")
•                 elif a >= 0.7:
•                     print("C")
•                 elif a >= 0.6:
•                     print("D")
•                 else:
•                     print("F")
•             else:
•                 print("Bad score")
•         except:
•             print("Not a number!")

• if N > 0:
•     print("total := ", sum)
•     print("count := ", N)
•     print("average := ", sum/N)
```