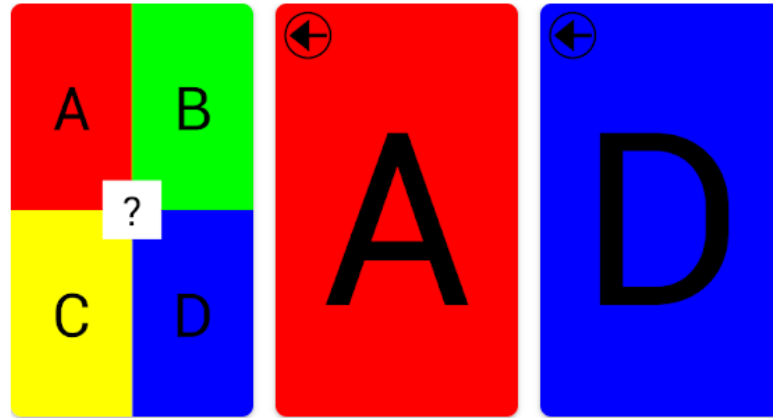# Chatbots with Personality

By Dr. Angelica Lim
Modified by Dr. Brian Fraser

Install ABCD Card App

iPhone

Android

Question 1

What is wrong with this code?

```
3_wines = ["Bourgogne", "Pinot Noir", "Ice"]
```

A. On the right, should use ( ) instead of [ ]
B. On the right, it should not use commas `,`
C. On the right, it should have a semicolon `;`
D. On the left, the variable name is invalid

Question 2

How could this code be improved?
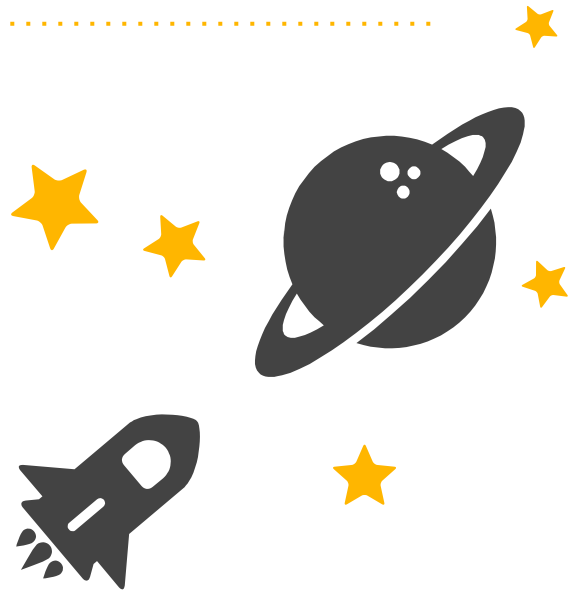
```
favourite_book = input()
print("Oh, that's a nice book!")
```
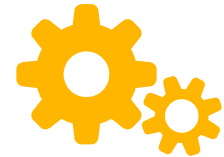
A. Rename input() to read_from_keyboard()
B. Add an argument to input()
C. Print out the name of the book the user entered
D. Rename favourite_book to fb.

Branching

Also known as "conditionals"

https://runestone.academy/runestone/books/published/thinkcspy/Selection/ConditionalExecutionBinarySelection.html
https://runestone.academy/runestone/books/published/thinkcspy/Selection/OmittingtheelseClauseUnarySelection.html

Branching chatbot

Make a chatbot that asks the human how their day is going, and make a comment that changes depending on how they answered.

How's it going?

Good!

Not great...

Let's Code
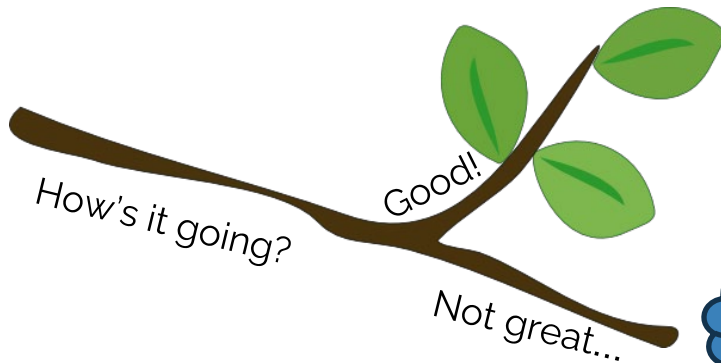
Design your **algorithm**

```
1    # How's it Going Bot
2    # Author: Angelica Lim
3    # Date: November 29, 2017
4
5    # Description: This bot will ask you how it's going and
6    # make a comment depending on how you answered
7
8    # Ask user how it's going
9
10   # Get the user's reply
11
12   # If they said Good, then reply Good!
13
14   # Otherwise, if they said Bad, then reply Oh no!
15
```

ALGORITHM   7

Translate to Python 3

```python
1   # How's it Going Bot
2   # Author: Angelica Lim
3   # Date: November 29, 2017
4
5   # Description: This bot will ask you how it's going and
6   # make a comment depending on how you answered
7
8   # Ask user how it's going
9   print("How's it going?")
10
11  # Get the user's reply
12  reply = input()
13
14  # If they said Good, then reply Good!
15  if reply == "Good":
16      print("Good!")
17
18  # Otherwise, if they said Bad, then reply Oh no!
19  elif reply == "Bad":
20      print("Oh no!")
```

if

elif

Double equals sign!

Note the **colon** and **the invisible indentation (tab)** before print.

Here, everything **indented** immediately after the **if** will run if the user replies "Good".

elif is short for "else if"

Thanks for catching that :)

```python
1   # How's it Going Bot
2   # Author: Angelica Lim
3   # Date: November 29, 2017
4
5   # Description: This bot will ask you how it's going and
6   # make a comment depending on how you answered
7
8   # Ask user how it's going
9   print("How's it going?")
10
11  # Get the user's reply
12  reply = input()
13
14  # If they said Good, then reply Good!
15  if reply == "Good":
16  print("Good!")
17
18  # Otherwise, if they said Bad, then reply Oh no!
19  elif reply == "Bad":
20  print("Oh no!")
21
```
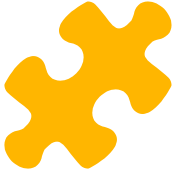
```
Python 3.6.1 (default, Dec 2015, 13:05:11)
[GCC 4.8.2] on linux
>
Traceback (most recent call last):
  File "python", line 16
    print("Good!")
              ^
IndentationError: expected an indented block
>
```

My amazing Python interpreter is checking my code for me. It noticed I forgot the **indentation** before my print statement.

Test how it works

Remember the feature we wanted to make:

It should make a comment depending on how you answered.

```
1   # How's it Going Bot
2   # Author: Angelica Lim
3   # Date: November 29, 2017
4
5   # Description: This bot will ask you how it's going and
6   # make a comment depending on how you answered
7
8   # Ask user how it's going
9   print("How's it going?")
10
11  # Get the user's reply
12  reply = input()
13
14  # If they said Good, then reply Good!
15  if reply == "Good":
16    print("Good!")
17
18  # Otherwise, if they said Bad, then reply Oh no!
19  elif reply == "Bad":
20    print("Oh no!")
```

```
input ⊟          clear ⌫

Python 3.6.1 (default, Dec 2015, 13:05:11)
[GCC 4.8.2] on linux
:
How's it going?
 Meh
:
```

It didn't reply anything!

Deploy by sending to others to test for you

Update your algorithm

```
1    # How's it Going Bot
2    # Author: Angelica Lim
3    # Date: November 29, 2017
4
5    # Description: This bot will ask you how it's going and
6    # make a comment depending on how you answered
7
8    # Ask user how it's going
9    print("How's it going?")
10
11   # Get the user's reply
12   reply = input()
13
14   # If they said Good, then reply Good!
15   if reply == "Good":
16       print("Good!")
17
18   # Otherwise, if they said Bad, then reply Oh no!
19   elif reply == "Bad":
20       print("Oh no!")
21
22   # In all other cases, reply "I see..."
```

ALGORITHM   11

Translate to Python 3

```
1    # How's it Going Bot
2    # Author: Angelica Lim
3    # Date: November 29, 2017
4
5    # Description: This bot will ask you how it's going and
6    # make a comment depending on how you answered
7
8    # Ask user how it's going
9    print("How's it going?")
10
11   # Get the user's reply
12   reply = input()
13
14   # If they said Good, then reply Good!
15   if reply == "Good":
16       print("Good!")
17
18   # Otherwise, if they said Bad, then reply Oh no!
19   elif reply == "Bad":
20       print("Oh no!")
21
22   # In all other cases, reply "I see..."
23   else:
24       print("I see...")
```

if

elif

else

The **else** catches all other cases.

Test how it works

Remember the feature we wanted to make:

It should make a comment depending on how you answered.

```
1    # How's it Going Bot
2    # Author: Angelica Lim
3    # Date: November 29, 2017
4
5    # Description: This bot will ask you how it's going and
6    # make a comment depending on how you answered
7
8    # Ask user how it's going
9    print("How's it going?")
10
11   # Get the user's reply
12   reply = input()
13
14   # If they said Good, then reply Good!
15   if reply == "Good":
16       print("Good!")
17
18   # Otherwise, if they said Bad, then reply Oh no!
19   elif reply == "Bad":
20       print("Oh no!")
21
22   # In all other cases, reply "I see..."
23   else:
24       print("I see...")
```

Now what happens?

Deploy by sending to others to test for you

Conditional Template

`if` `<boolean expression>:`← The only thing required in a conditional

   `...`

`elif` `<boolean expression>:`   ← <u>Optional</u>. Can be repeated.

   `...`

`else:`   ← <u>Optional</u>. You can only have one else per if.

   `...`

ALGORITHM **14**

Now try this

Modify the How's it Going chatbot to use 2 "elif" statements

Compact code

Instead of making tons of **elif** statements,
you can also use **or** when necessary.

https://runestone.academy/runestone/books/published/thinkcspy/Selection/Logicaloperators.ht

Let's Code

Compact code

Instead of making tons of **elif** statements, you can also use **or** when necessary.
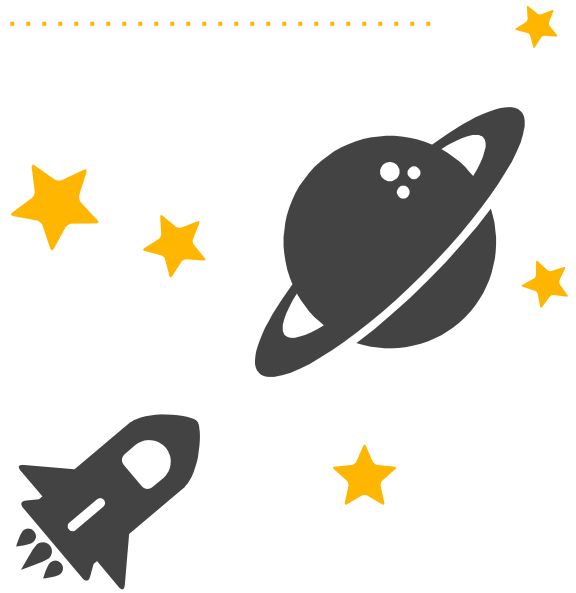
```python
1   # How's it Going Bot
2   # Author: Angelica Lim
3   # Date: November 29, 2017
4
5   # Description: This bot will ask you how it's going and
6   # make a comment depending on how you answered
7
8   # Ask user how it's going
9   print("How's it going?")
10
11  # Get the user's reply
12  reply = input()
13
14  # If they said Good/good/great, then reply Good! What went well?
15  if reply == "Good" or reply == "good" or reply == "great":
16      print("Great!")
17
18  # Otherwise, if they said Bad, then reply Oh no!
19  elif reply == "Bad":
20      print("Oh no!")
21
22  # In all other cases, reply "I see..."
23  else:
24      print("I see...")
25
```

https://runestone.academy/runestone/books/published/thinkcspy/Selection/Logicaloperators.html

ALGORITHM   17

Boolean

True or False

Boolean **expressions**

Example of Boolean Expression that can be True or False

```
response == "fine"
```

Note! == is NOT the same as =

```
response == "fine" or response == "good"
```

```
...
```

Boolean Examples

```python
# Boolean Review
# Author: Angelica Lim
# Date: Jan. 12, 2018

# Setting a variable to the string Angelica
user_name = "Angelica"

# Print out Hi teach if user_name is Angelica
if user_name == "Angelica":
  print("Hi teach.")

# Print out some boolean expressions
print(user_name == "Angelica")  # True
print(user_name == "Michael")  # False
print(user_name == "angelica")  # False

print(user_name == "angelica" or user_name == "Michael")  # False
print(user_name == "Angelica" or user_name == "Michael")  # True
```

```
Python 3.6.1 (default, Dec 2015, 13:05:11)
[GCC 4.8.2] on linux
>
Hi teach.
True
False
False
False
True
>
```

Line Length

PEP8 is a very strict coding style guide. You can try to make your code be PEP8 compatible but it's not required for now.

Starting Week 3, assignments will require **100 characters per line or less.**

There's a faint grey line showing 80 char. width (recommended length)

Indents 4 spaces from line above

Adding a line break may require adding **** as a line continuation character.

```python
# See if the user types in some word
# by Brian Fraser
# Sept 10, 2023

# Get a user's input
feeling = input("How are you feeling? ")

# Check if they are doing well
if feeling == "Great" or "Good" or "I'm pretty good, thank you! How are you doing today?":
    print("Awesome!")
elif feeling == "Bad" \
    or "Not very good, but thank you for asking" \
    or "Pretty terrible today":
    print("On no!")
else:
    print("I see.")
```

This line has exactly 100 characters (including the period), use it to keep each line under limit.

Show Vertical Ruler in VS Code

- Configure VS Code to show a vertical ruler at 80 characters
  - **File**
    > **Preferences**
    > **Settings**
  - Type "**ruler**"
  - Click "**Edit in settings.json**"
  - Type in **80**
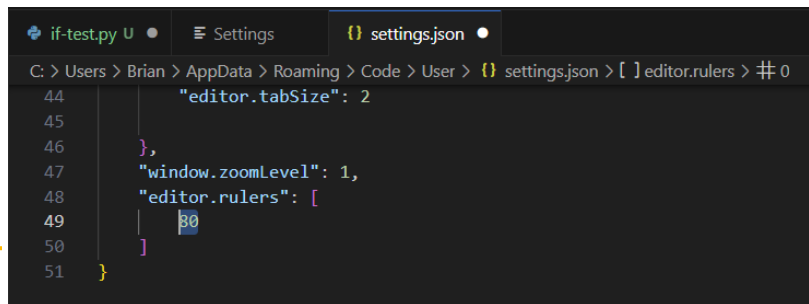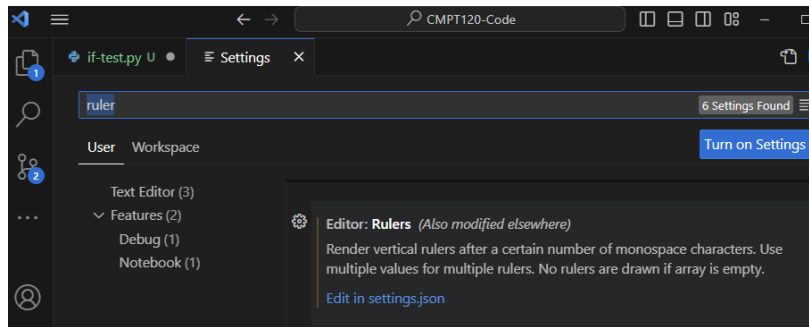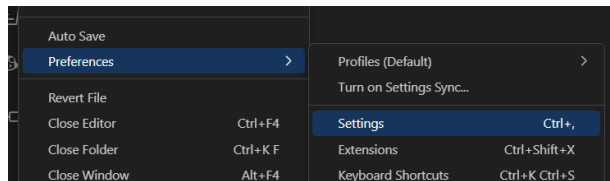
Horoscope Bot Idea

Create a horoscope bot that 1) asks what year you are born, and 2) tells you what your chinese zodiac sign is.

RAT	OX	TIGER	RABBIT	DRAGON	SNAKE	HORSE	GOAT	MONKEY	ROOSTER	DOG	PIG
1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995

How would you code this?

Horoscope Bot

FYI: modulo % can be used to make this code much more compact! We will learn more about numeric operators in Week 4, so don't worry about it for now.

if

elif

elif

or

```python
# Horoscope Bot
# Author: Angelica Lim
# Date: Sep. 8, 2020

# Description: The bot asks what year you are born and tells you what your Chinese Zodiac sign is.

# Greet the user
print("Hello! I'm the Horoscope Bot. Tell me, what year were you born?")

# Get users year of birth
birth_year = input()

# 1996/1984/1972/1960/1948 ==> Rat
if birth_year == "1996" or birth_year == "1984" or birth_year == "1972" or birth_year == "1960" or birth_year == "1948":
    print("You were born in the Year of the Rat! You are quick-witted and resourceful. You are best matched with an Ox, Rabbit, or Dragon.")

# 1997/1985/1973/1961/1949 ==> Ox
elif birth_year == "1997" or birth_year == "1985" or birth_year == "1973" or birth_year == "1961" or birth_year == "1949":
    print("You were born in the Year of the Ox!")

# 1998/1986/1974/1962/1950 ==> Tiger, or year % 12 == 6
# Can also use modulo here, but need to know about type conversion to compare 2 integers
#elif int(birth_year) % 12 == 6:
elif birth_year == "1998" or birth_year == "1986" or birth_year == "1974" or birth_year == "1962" or birth_year == "1950":
    print("You were born in the Year of the Tiger!")
```

Horoscope Bot

etc...

```
47    # 2004/1992/1980/1968/1956 ==> Monkey
48    elif birth_year == "2004" or birth_year == "1992" or birth_year == "1980" or birth_year ==
      "1968" or birth_year == "1956":
49      print("You were born in the Year of the Monkey!")
50
51    # 2005/1993/1981/1969/1957 ==> Rooster
52    elif birth_year == "2005" or birth_year == "1993" or birth_year == "1981" or birth_year ==
      "1969" or birth_year == "1957":
53      print("You were born in the Year of the Rooster!")
54
55    # 2006/1994/1982/1970/1958 ==> Dog
56    elif birth_year == "2006" or birth_year == "1994" or birth_year == "1982" or birth_year ==
      "1970" or birth_year == "1958":
57      print("You were born in the Year of the Dog!")
58
59    # 2007/1995/1983/1971/1959 ==> Pig
60    elif birth_year == "2007" or birth_year == "1995" or birth_year == "1983" or birth_year ==
      "1971" or birth_year == "1959":
61      print("You were born in the Year of the Pig!")
62
63    # Error handling
64    else:
65      print ("Please enter a year between 1948 and 2007.")
```

`elif`

`else`

Chinese Zodiac

Expand your chatbot to print the animals compatible with the user's year

You try coding this later!

Credit: TeachersGem

Compatibility Chart

Rat	Rat, Dragon, Monkey
Ox	Ox, Snake, Rooster
Tiger	Tiger, Dog, Horse
Rabbit	Rabbit, Pig, Goat
Dragon	Dragon, Monkey, Rat
Snake	Snake, Rooster, Ox
Horse	Horse, Dog, Tiger
Goat	Goat, Pig, Rabbit
Monkey	Monkey, Dragon, Rat
Rooster	Rooster, Snake, Ox
Dog	Dog, Tiger, Horse
Pig	Pig, Rabbit, Goat

Source: Wikipedia

Question 1

What does == refer to in this code?

```
number = 5
print(number == 5)
```

A. Assign 5 into number

B. Does number hold the value 5

C. Assign number into 5

D. Text to print to the screen (prints "number == 5")

Question 2

What is wrong with this code?

```
number = 5
if number == 5 or 6 or 7:
    print("Ok!")
```

A) It is missing ( ) in the if statement.

B) If statement must repeat number == for each option.

C) Indentation

D) Swap use of = and == (they are backwards)

Question 3

What is wrong with this code?

```
number = 10
if number == 5 or number == 10:
print("Ok!")
```

A) Indentation

B) It's impossible for number to be both 5 and 10.

C) The if statement needs a semicolon `;` instead of a colon `:`

D) Cannot put an exclamation mark (!) in a print statement.

Let's **review** some concepts

What does a conditional do?

Is the **elif** part of a conditional mandatory?

Is the **else** part of a conditional mandatory?

Is the **if** part of a conditional mandatory?

What is wrong with this code fragment?

```
if color = "purple":
    print("Cool!")
```

What values can a Boolean expression produce?