香港浸會大學
HONG KONG BAPTIST UNIVERSITY

# Conditional Statements

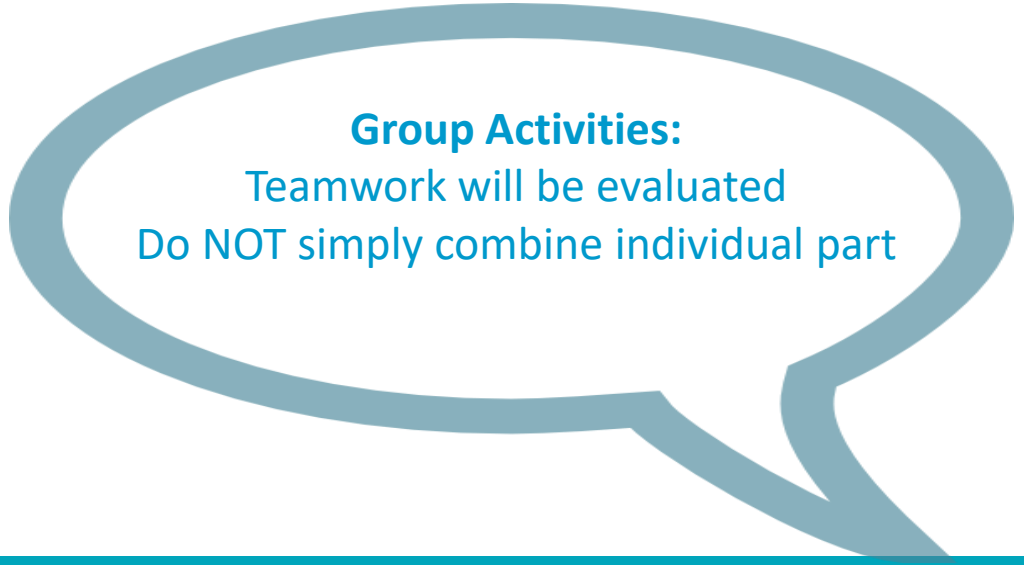
JOUR7280/COMM7780

Big Data Analytics for Media and Communication

Instructor: Dr. Xiaoyi Fu

# Group Activities

- Grouping: 3-4 students per group
- Group List Deadline: Submit the group list to Moodle by **31 Jan,** including the following
  - group member names and student IDs
  - group name

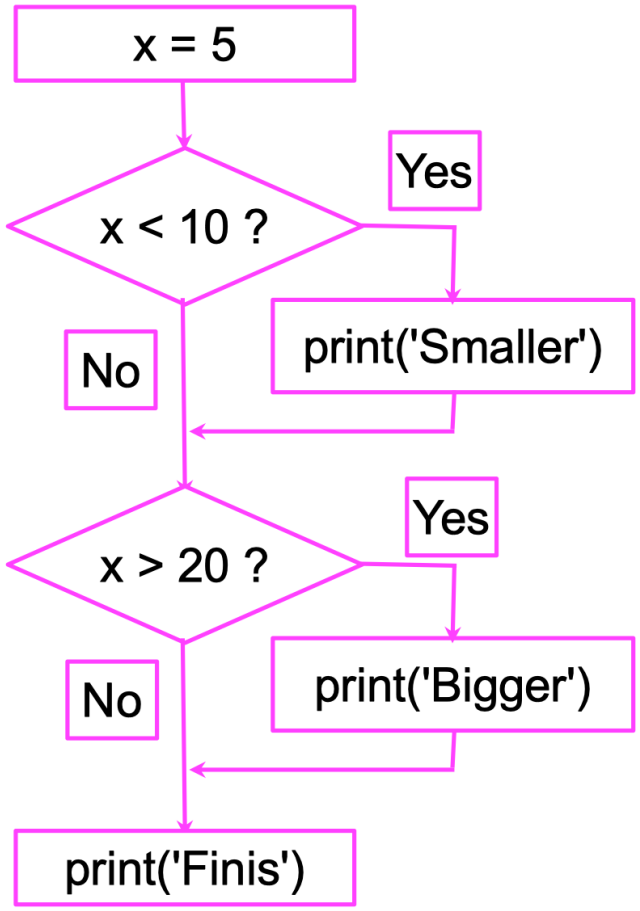


# Agenda

- One-way decisions
- Two-way decisions
- Multi-way decisions
- try / except

# One-way decisions

# Conditional steps




Conditional statement

**Program**

```
x = 5
if x < 10:
    print('Smaller')
if x > 20:
    print('Bigger')
print('Finish')
```

**Output**

```
Smaller
Finish
```

*3 conditional-statements.ipynb*

# Comparison Operators

- Boolean expressions ask a question and produce a Yes or No result which we use to control program flow
- Boolean expressions using comparison operators evaluate to True / False or Yes / No
- Comparison operators look at variables but not change the variables

| Python | Meaning |
|---|---|
| < | Less than |
| <= | Less than or equal to |
| == | Equal to |
| >= | Greater than or equal to |
| > | Greater than |
| != | Not equal |

Remember: "=" is used for assignment

# Comparison Operators

```
x = 5
if x == 5:
    print('Equals 5')
if x > 4:
    print('Greater than 4')
if x >= 5:
    print('Greater than or Equals 5')
if x < 6: print('Less than 6')
if x <= 5:
    print('Less than or Equals 5')
if x != 6:
    print('Not equal 6')
```

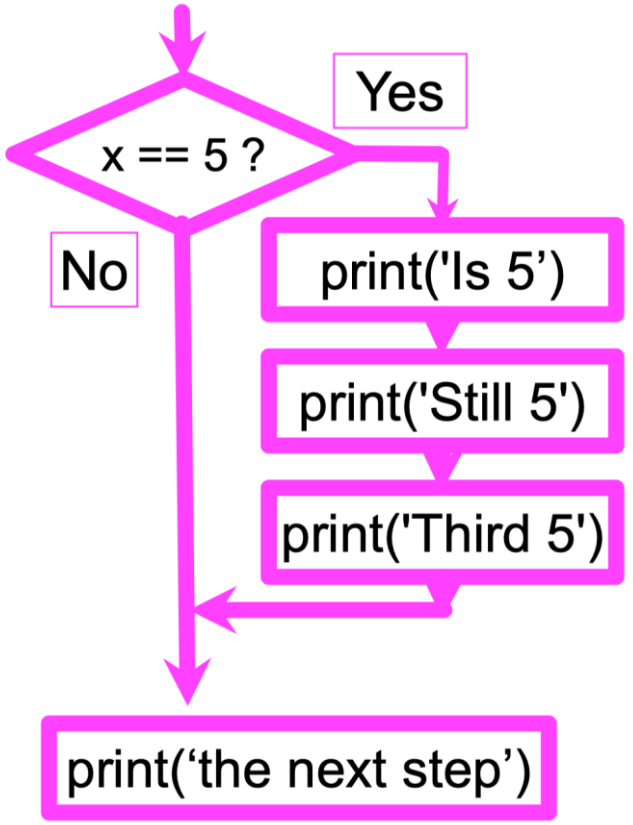
```
Equals 5
Greater than 4
Greater than or Equals 5
Less than 6
Less than or Equals 5
Not equal 6
```

*3 conditional-statements.ipynb*

# One-way Decisions

```
x = 5
print('Before 5')
if x == 5:
    print('Is 5')
    print('Is Still 5')
    print('Third 5')
print('Afterwords 5')
print('Before 6')
if x == 6:
    print('Is 6')
    print('Is Still 6')
    print('Third 6')
print('Afterwords 5')
```

```
Before 5
Is 5
Is Still 5
Third 5
Afterwords 5
Before 6
Afterwords 5
```




*3 conditional-statements.ipynb*

# One-way Decisions

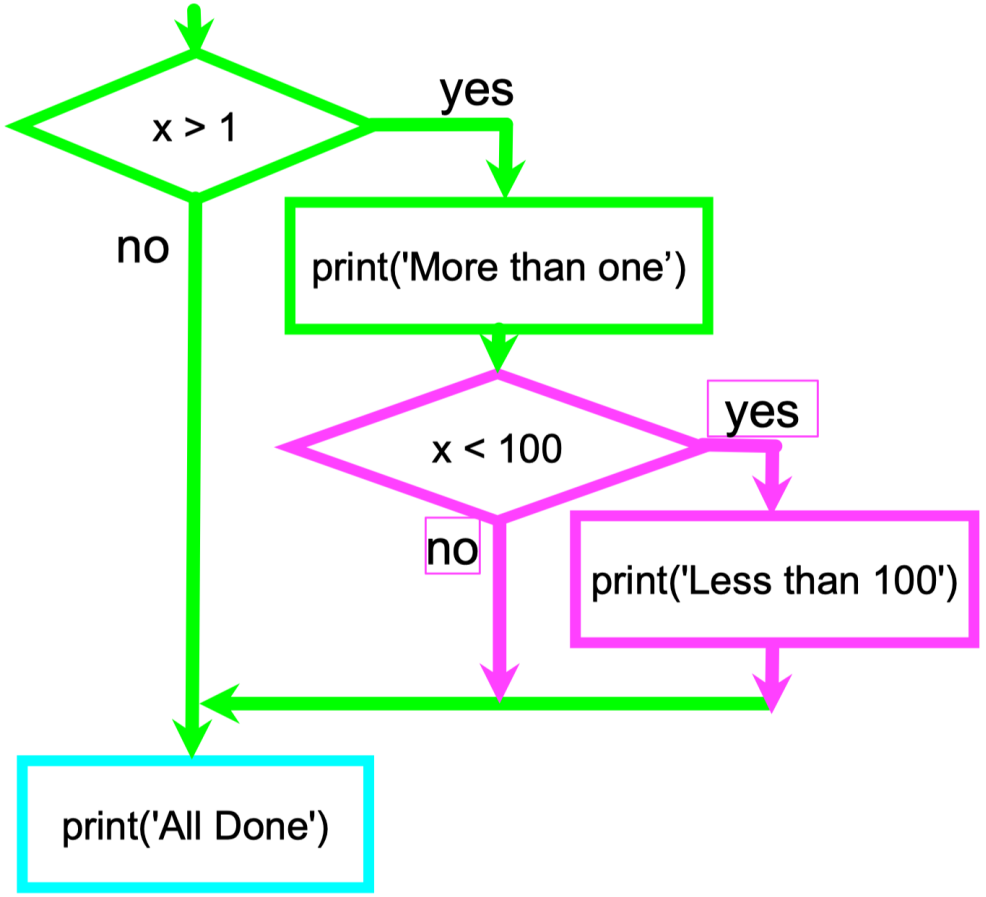
```
x = 5
print('Before 5')
if x == 5:
    print('Is 5’)
    print('Is Still 5’)
    print('Third 5')
print('Afterwords 5')
print('Before 6')
if x == 6:
    print('Is 6’)
    print('Is Still 6’)
    print('Third 6')
print('Afterwords 6')
```

Increase / maintain after `if`

Decrease to indicate end of block

# Nested Decisions

```
x = 42
if x > 1 :
    print('More than one‘)
    if x < 100 :
        print('Less than 100’)
print('All done')
```

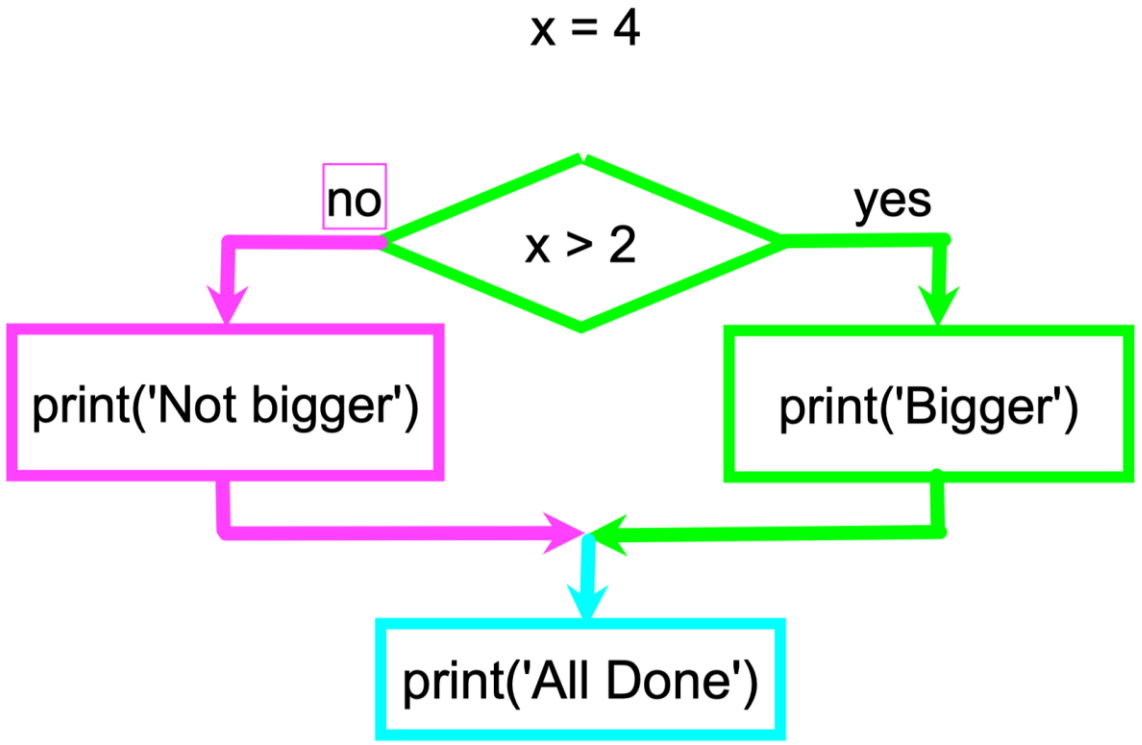



*3 conditional-statements.ipynb*

# Two-way decisions

# Two-way Decisions

- Sometimes we want to do one thing if a logical expression is true and something else if the expression is false
- It is like a fork in the road - we must choose one or the other path but not both.

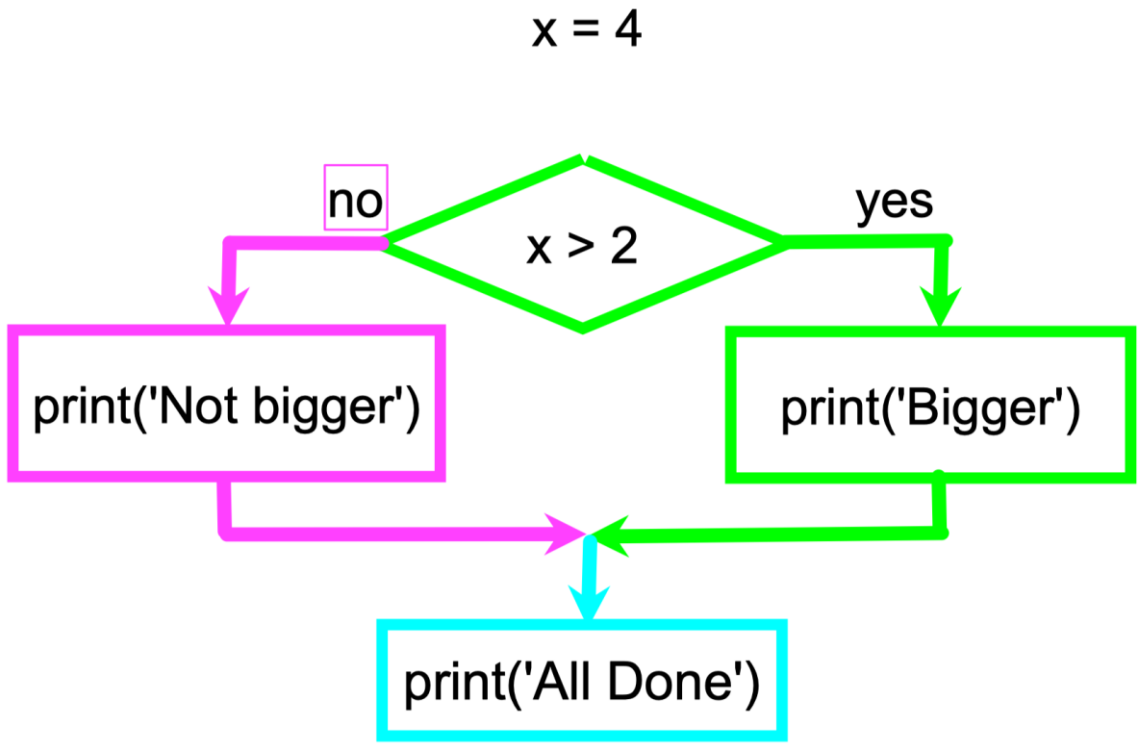



*3 conditional-statements.ipynb*

# Two-way decisions with *else*

```
x = 4
if x > 2:
    print('Bigger')
else:
    print('Not bigger')

print('All done')
```

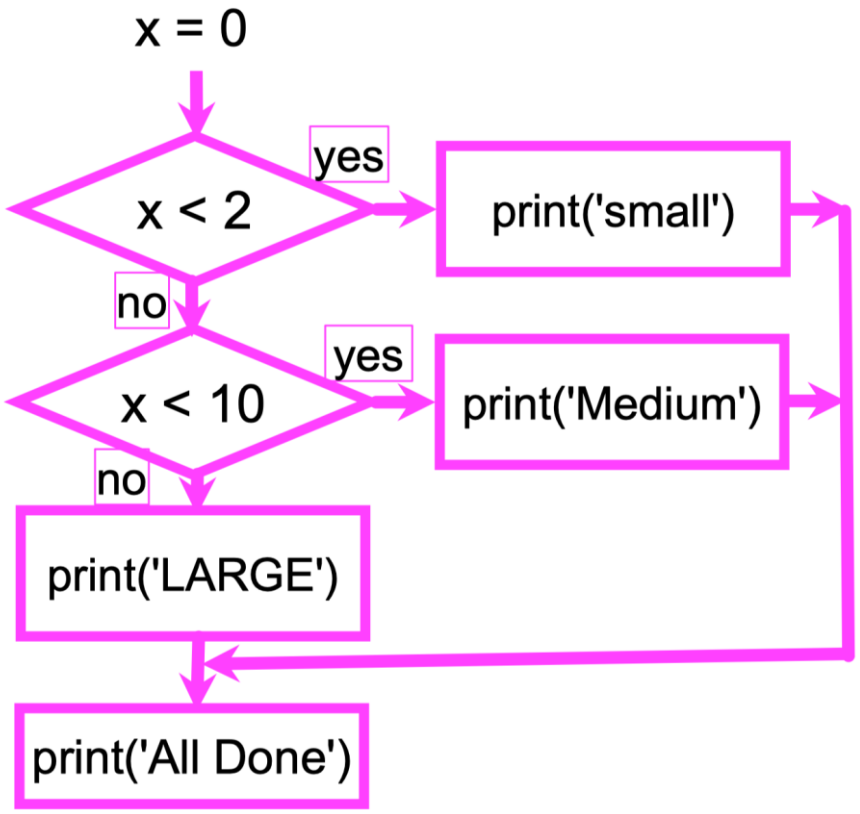



*3 conditional-statements.ipynb*

# Multi-way decisions

# Multi-way

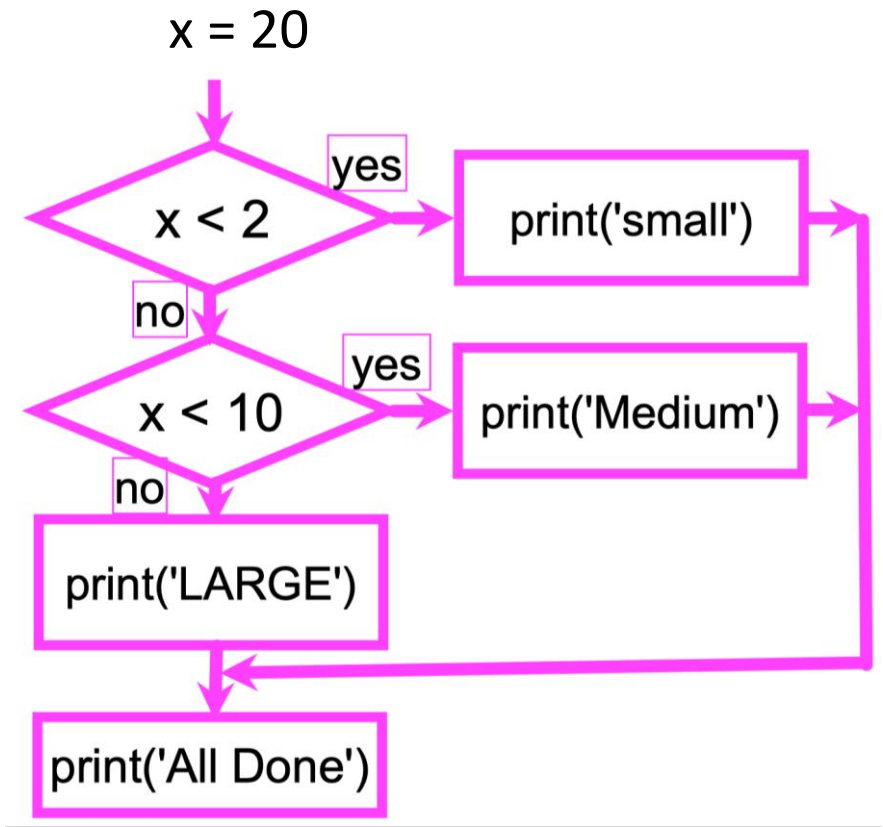
```
x = 0
if x < 2 :
    print('small')
elif x < 10 :
    print('Medium')
else :
    print('LARGE')
print('All done')
```




*3 conditional-statements.ipynb*

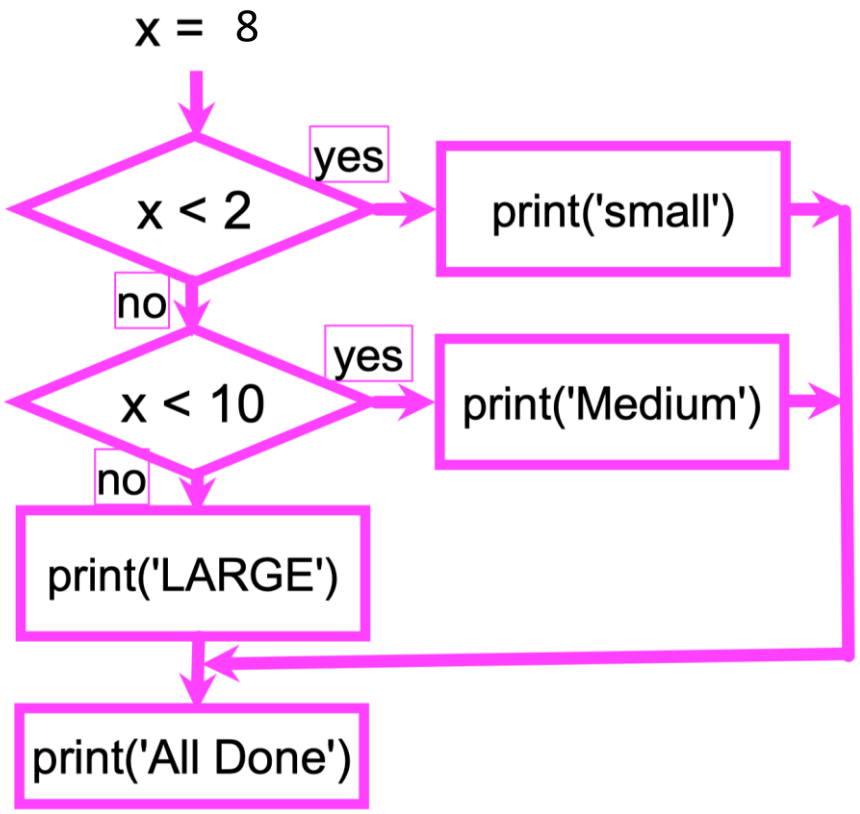
# Multi-way

```
x = 20
if x < 2 :
    print('small')
elif x < 10 :
    print('Medium')
else :
    print('LARGE')
print('All done')
```



# Multi-way

```
x = 8
if x < 2 :
    print('small')
elif x < 10 :
    print('Medium')
else :
    print('LARGE')
print('All done')
```



# Multi-way

```
# No else
x = 5
if x < 2 :
    print('small')
elif x < 10 :
    print('Medium')

print('All done')
```

- There is no limit on the number of elif statements. If there is an else clause, it has to be at the end, but there doesn't have to be one.

```
if x < 2 :
    print('small')
elif x < 10 :
    print('Medium')
elif x < 20 :
    print('Big')
elif x < 40 :
    print('Large')
elif x < 100:
    print('Huge')
else :
    print('Ginormous')
```

# Multi-way Puzzles

- Which will never print regardless of the value for x?

```
if x < 2 :
    print('Below 2')
elif x > 2 :
    print('Above 2')
else :
    print('Something else')
```

```
if x < 2 :
    print('Below 2')
elif x < 20 :
    print('Below 20')
elif x < 10 :
    print('Below 10')
else :
    print('Something else')
```

*3 conditional-statements.ipynb*

# try / except

# The try/except structure

- A way to eliminate/catch "traceback"
- You surround a dangerous section of code with try and except
- If the code in the try works
  - The except is skipped
- If the code in the try fails
  - It jumps to the except section

# The try/except structure

```
astr = 'Hello Bob'
istr = int(astr)
print('First', istr)
astr = '123'
istr = int(astr)
print(Second', istr)
```

```
---------------------------------------
---------------------------------
ValueError                                Traceback
(most recent call last)
<ipython-input-8-f2a21bd5ef4e> in <module
>
      1 astr = 'Hello Bob'
----> 2 istr = int(astr)
      3 print('First', istr)
      4 astr = '123'
      5 istr = int(astr)

ValueError: invalid literal for int() wit
h base 10: 'Hello Bob'
```

Last line it executed, won't continue
Quit at line 2

*3 conditional-statements.ipynb*

# The try/except structure

```
astr = 'Hello Bob'
try:
    istr = int(astr)
except:
    istr = -1
print('First', istr)
```

When the first conversation fails – it just drops into the except: clause and the program continues

```
First -1
Second 123
```

```
astr = '123'
try:
    istr = int(astr)
except:
    istr = -1
print('Second', istr)
```

When the second conversation succeeds – it just skips the except: clause and the program continues

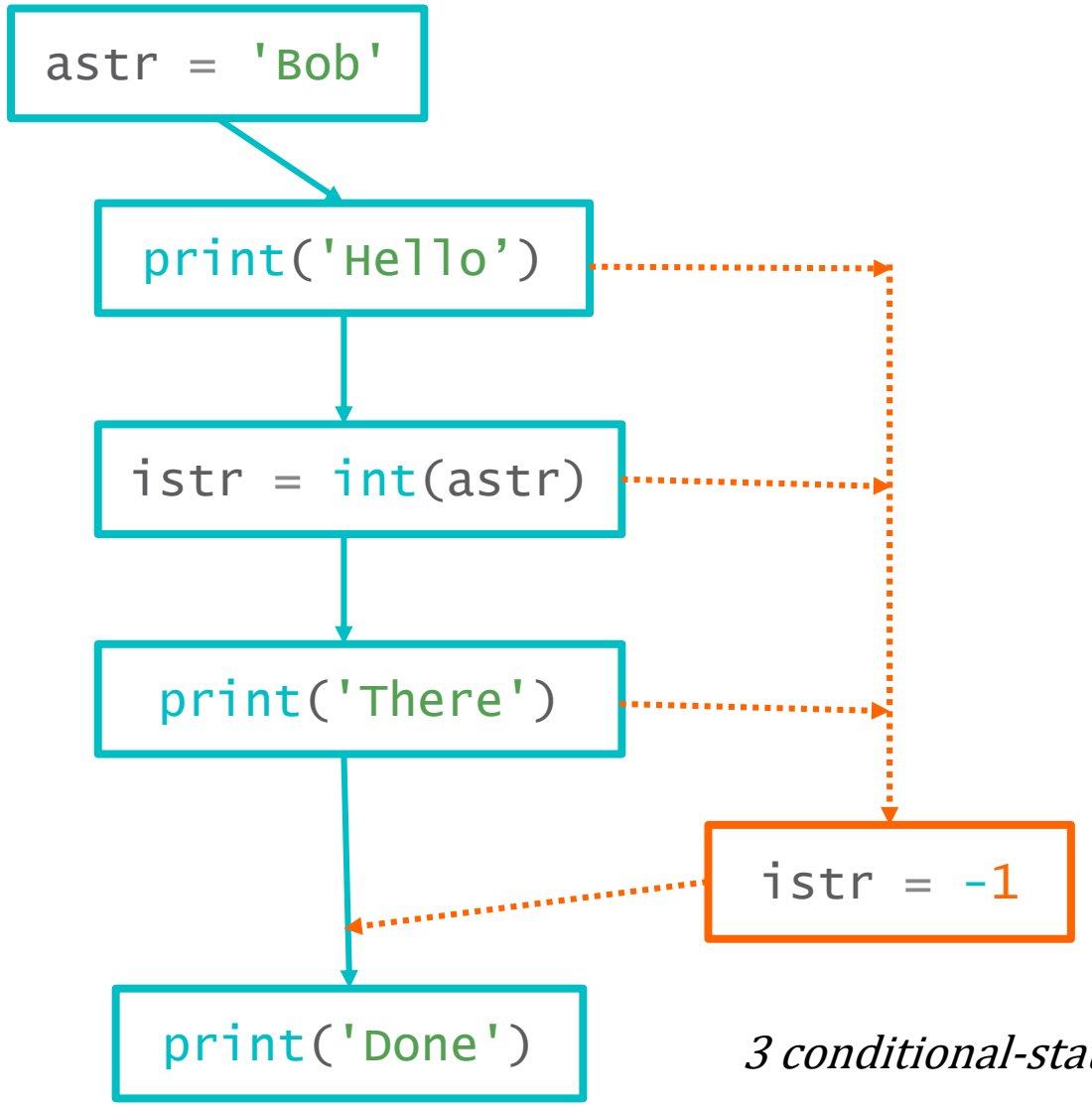
*3 conditional-statements.ipynb*

# try/except

```
astr = 'Bob'
try:
    print('Hello')
    istr = int(astr)
    print('There')
except:
    istr = -1

print('Done', istr)
```

```
Hello
Done -1
```




*3 conditional-statements.ipynb*

# try/except

```
rawstr = input('Enter a number: ')
try:
    ival = int(rawstr)
except:
    ival = -1

if ival > 0:
    print('Nice work')
else:
    print('Not a number')
```

```
Enter a number: 42
Nice work
```

```
Enter a number: forty-two
Not a number
```

*3 conditional-statements.ipynb*

# Acknowledgements / Contributions

- Some of the slides used in this lecture from:
  - Charles R. Severance - University of Michigan School of Information

# Thank You