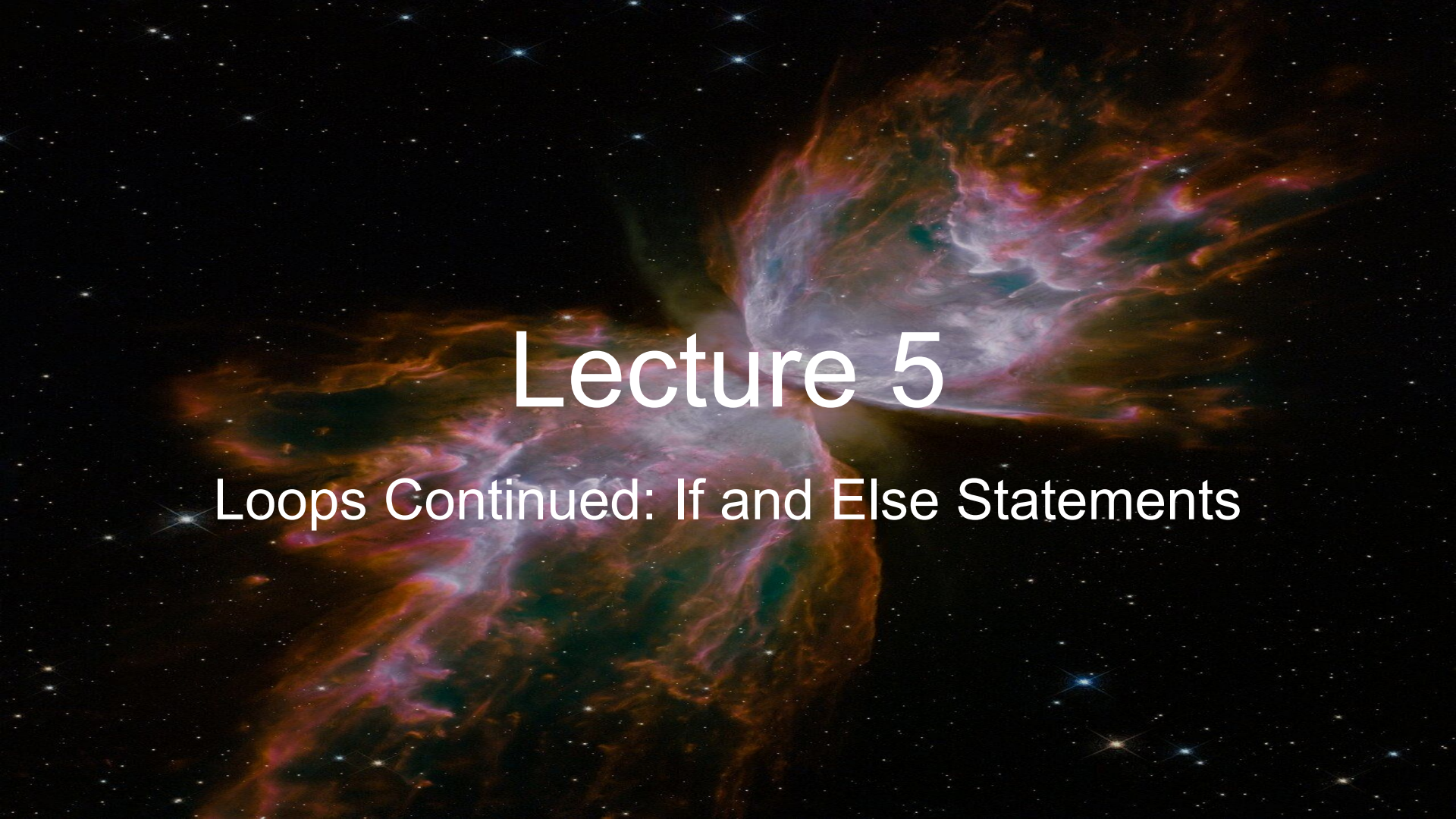

Lecture 5
Loops Continued: If and Else Statements

# Final Project Groups

- Group 1: Anshul, John, Audrey, Araav, Wai kit, James, Anika
- Group 2: Siyuan, Luca, Brandon, Trish, Matthew, Anvitha
- Group 3: Sanayah, Donovan, Arjun, Mohan, Licol, Mariano
- Group 4: Dan, Seohyun, Arnoldo, Priya, Alyssa, Grace, Andrew
- Group 5: Aaron, Chengze, Xinyao, Manthan, Zixiao, Yichen, Emily
- Group 6: Sierra, Matthew, Sahith, Shriya, Andrea, Samuel
- Group 7: Jerry, Jiyeon, Isaiah, Xiangyu, Alexander, Luis, Thi
- Group 8: Advika, Sarah, Ankita, Yiyang, Yuxuan, Victor, Ky

Some review from the last week…

- Pip Install
- Overleaf & LaTeX
- Github

# Boolean Operations

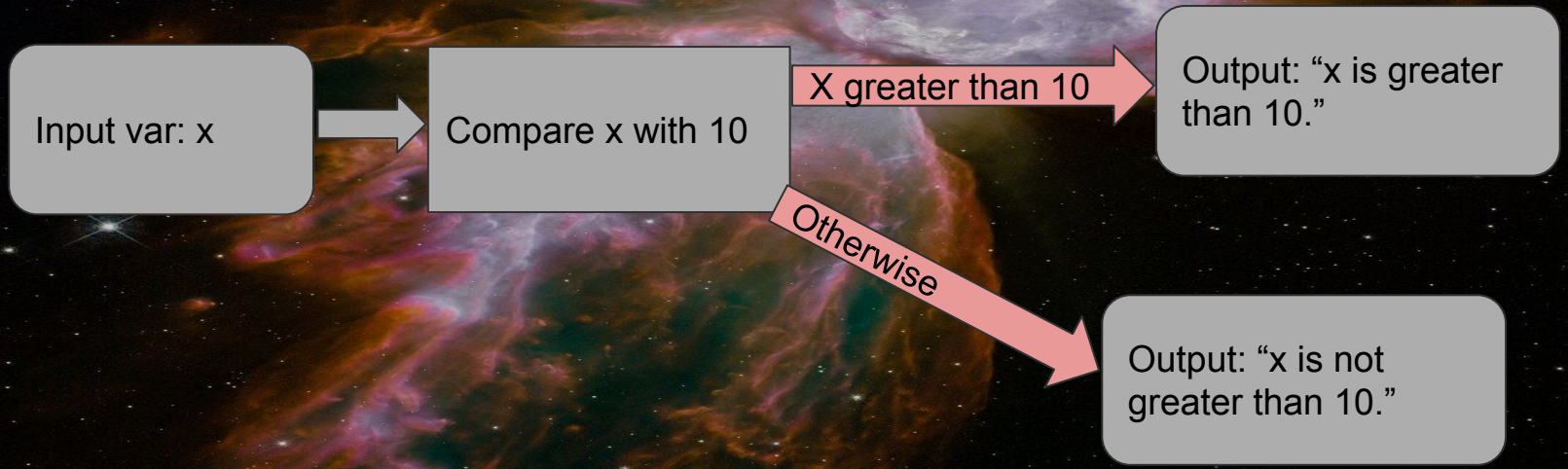
- True or False?

1. `True and True` → True
2. `True or False` → True
3. `1 >= 2` → False
4. `5%2 == 1` → True
5. `(2!=2) or (1==1)` → True
6. `2!=2 or 1==1` → True
7. `3/0 or True` → Error
8. `True or 3/0` → True
9. `False and 3/0` → False
10. `not 2==1` → True

| operators | descriptions |
|---|---|
| (), [], {}, ‘’ | tuple, list, dictionnary, string |
| x.attr, x[], x[i:j], f() | attribute, index, slide, function call |
| +x, -x, ~x | unary negation, bitwise invert |
| ** | exponent |
| *, /, % | multiplication, division, modulo |
| +, - | addition, substraction |
| <<, >> | bitwise shifts |
| & | bitwise and |
| ^ | bitwise xor |
| \| | bitwise or |
| <, <=, >=, > | comparison operators |
| ==, !=, is, is not, in, | comparison operators (continue) |
| not in | comparison operators (continue) |
| not | boolean NOT |
| and | boolean AND |
| or | boolean OR |

# If/Else Statements

- Write a piece of code that outputs if the variable is greater than 10:



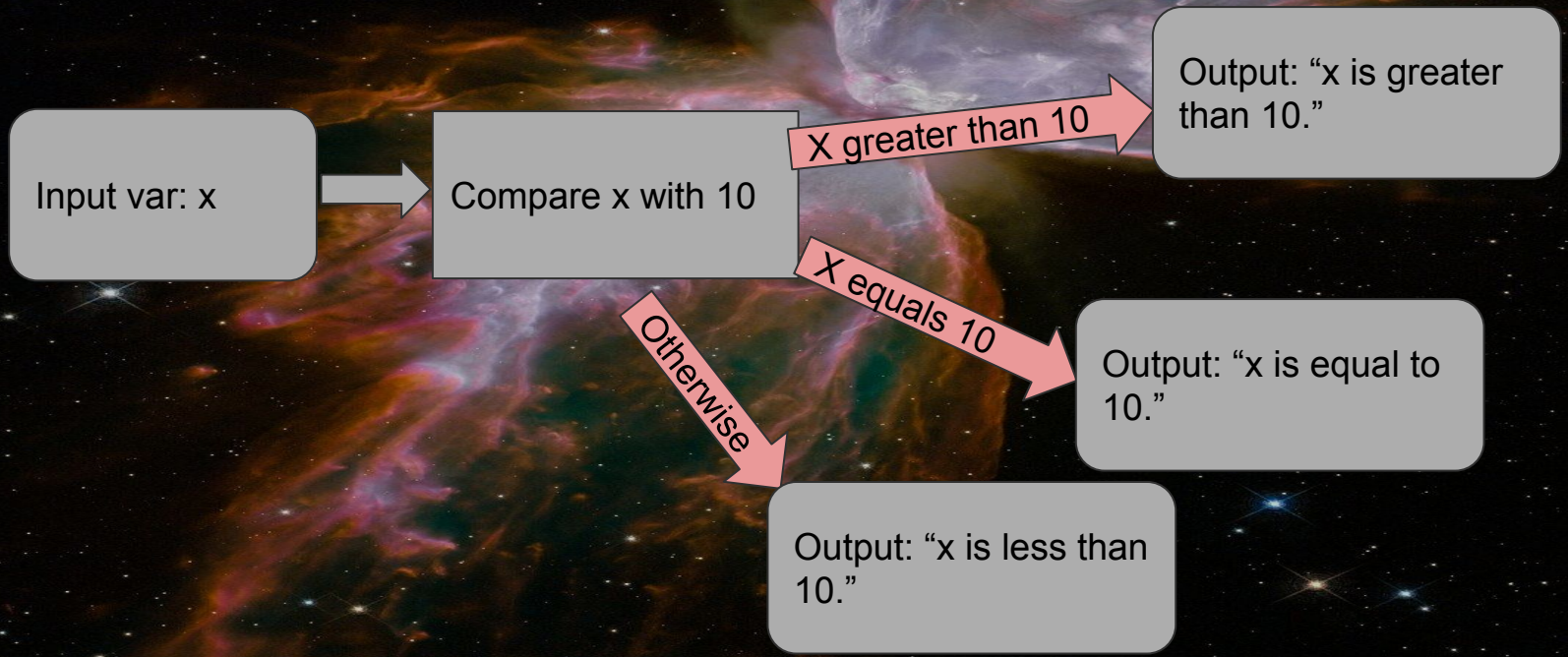
# If/Else Statements

- Write a piece of code that outputs if the variable is greater than 10:

```
x = int(input(“please enter an integer:”))
if x > 10:
    print(“x is greater than 10.”)
else:
    print(“x is not greater than 10.”)
```

# Elif Statements

- What if also we want to separate the equal case?



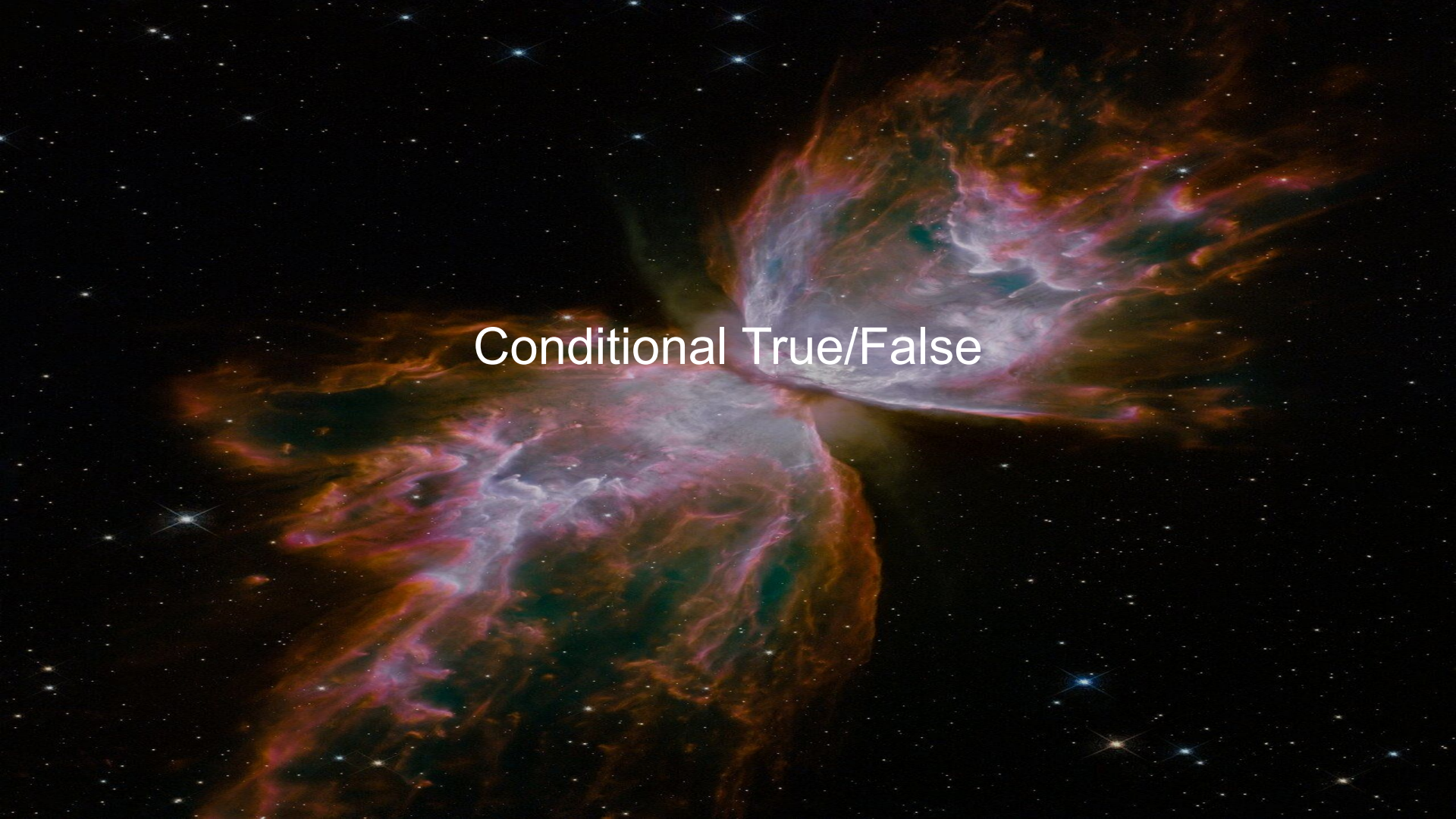
# Elif Statements

- What if also we want to separate the equal case?

```
x = int(input("please enter an integer:"))

if x>10:
print("x is greater than 10.")
elif x==10:
    print("x is equal to 10")
else:
    print("x is smaller than 10.")
```

Else if statement


Conditional True/False

# Would this run?

In [1]:
```
1 import numpy as np
2 import matplotlib.pyplot as plt
```

In [2]:
```
1 def sinc_plot(x):
2     sinc = np.sin(x)/x
3
4     plt.plot(x, sinc)
5
6     return
```

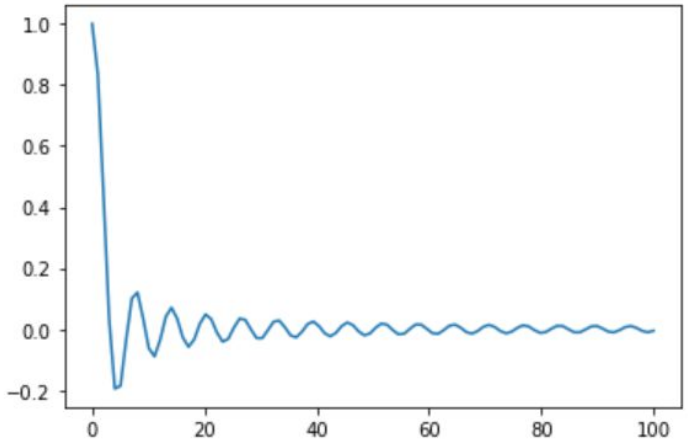
# Would this run?

In [2]:
```
def sinc_plot(x):
    sinc = np.sin(x)/x

    plt.plot(x, sinc)

    return
```

In [8]:
```
x = np.linspace(0.01, 100, 100)
sinc_plot(x)
```



# Would this run?

In [ ]:

```
1  a = []
2  f = []
3  for i in range(0,1000)
4      F = np.e**(-2*i)
5      a.append(F)
6  f = np.array(a)
```

# Would this run?

In [16]:

```
1  a = []
2  f = []
3  for i in range(0,1000)
4      F = np.e**(-2*i)
5      a.append(F)
6  f = np.array(a)
```

```
  Input In [16]
    for i in range(0,1000)
                          ^
SyntaxError: invalid syntax
```

# Would this run?

In [ ]:

```
1  x = np.linspace(1, 8, 20)
2  count = 0
3  while count < 5:
4      y = []
5  for i in range(len(x)):
6      Y_val = np.random.randint(0, x[i])
7      y.append(Y_val)
8      plt.plot(x, y, '.')
```

# Would this run?

In [3]:

```
1  x = np.linspace(1, 8, 20)
2  count = 0
3  while count < 5:
4      y = []
5  for i in range(len(x)):
6      Y_val = np.random.randint(0, x[i])
7      y.append(Y_val)
8      plt.plot(x, y, '.')
```

```
---------------------------------------------------------------------------
KeyboardInterrupt                         Traceback (most recent call last)
Input In [3], in <cell line: 3>()
      1 x = np.linspace(1, 8, 20)
      2 count = 0
----> 3 while count < 5:
      4     y = []
      5 for i in range(len(x)):

KeyboardInterrupt:
```

# Would this run?

In [ ]:

```
value = 0
x = eval(input('Enter numerical value: '))
elif x > 10 :
    value = -1
elif x > 7 :
    value = 6
elif x > -1 :
    value = 1
else :
    value = 0

print (value)
```

# Would this run?

In [5]:

```
1  value = 0
2  x = eval(input('Enter numerical value: '))
3  elif x > 10 :
4      value = -1
5  elif x > 7 :
6      value = 6
7  elif x > -1 :
8      value = 1
9  else :
10     value = 0
11
12 print (value)
```

```
  Input In [5]
    elif x > 10 :
    ^
SyntaxError: invalid syntax
```


Some More Loops Coding Demos