Topic 5: Conditionals

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Announcements

Weekly Reminders

A. Don't forget to register with the CBTF to take the quiz this week.
B. Homework 4 is posted and homework 3 has entered it's grace period week.
C. Post reading 6 due tomorrow.

Poll Questions

Poll Question: Boolean Expressions

Expressions that evaluate to `True` or `False`.

```
1 (1 + 6) < (2 + 5)
```

A. `True`
B. `False`
C. TypeError
D. SyntaxError

Poll Question: Boolean Expressions

Expressions that evaluate to `True` or `False`.

```
1 "cat" < "Dog"
```

A. `True`
B. `False`
C. TypeError
D. SyntaxError

Poll Question: If Statements

What does this code print?

```
1 x = 1
2 if x < 7:
3   print(x)
4 print(7)
```

- A 1
- B 7
- C 1
7
- D SyntaxError

Poll Question:

What does this code print?

```
1 age = 17
2 young = age < 30
3 if young == true:
4   print(age)
```

A. Nothing
B. 17
C. 30
D. SyntaxError

Poll Question: If-Else Statements

What does this code print?

```
1 x = 2
2 if x > 8:
3   x = x - 2
4   print(x)
5 else:
6   print(8)
```

A. 0

B. 8

C.
0
8

D. SyntaxError

Poll Question:

```
1 grade = 98
2 if grade >= 90:
3   print("You got an A!")
4 if grade >= 80:
5   print("You got a B!")
6 else:
7   print("You got something else")
```

- A You got an A!
- B You got a B!
- C You got something else
- D The correct answer is not listed

Poll Question:

```
1 grade = 98
2 if grade >= 90:
3   print("You got an A!")
4 if grade >= 80 and grade < 90:
5   print("You got a B!")
6 else:
7   print("You got something else")
```

- A You got an A!
- B You got a B!
- C You got something else
- D The correct answer is not listed

Poll Question: If Statements

What's the result of running the following code?

```
1 x = 5
2 if x == 3 or 4:
3   print(x)
```

- A 3
- B 4
- C 5
- D SyntaxError

Boolean Operators

Boolean Operators

A. Why is `x == 3 or 4` always True?
B. Alternatives:
   1. `x == 3 or x == 4`
   2. `x in [3, 4]`
C. Types of operators:
   1. **Binary operators:** and, or
   2. **Unary Operators:** not

Truthy and Falsy

A. Python will convert non-Boolean types to Booleans.

```
if "hello":
```

B. Accomplished via the use of the `bool()` function.

```
boo("hello")
```

C. All values are truthy (convert to `True`) except those displayed to the right:

- `None`
- `False`
- `0`
- `0.0`
- `0j`
- `Decimal(0)`
- `Fraction(0, 1)`
- `[]`
- `{}`
- `()`
- `''`
- `b''`
- `set()`
- `range(0)`

More Poll Questions

Poll Question:

What does `test(7)` return?

```
1 def test(num):
2   if num > 0:
3     return True
4   return False
```

- A `True`
- B `False`
- C First `True` then `False`.
- D The tuple `(True, False)`

Poll Question: Printing with Bools

What does the following segment of code produce?

```
1 print("George") and print("Boole")
```

A. George

B. Boole

C. George
Boole

D. SyntaxError

Short Circuit

Short Circuiting

- Python is **lazy**
- It won't evaluate Boolean expressions it doesn't need to

```
True or anything() # This is True
False and anything() # This is False
```

- Python won't evaluate the `anything()` part.
- You can use this to prevent errors from occurring in your code or having to next if statements:

```
if (len(my_str) > 10) and (my_str[10] == 'a'):
  print("the tenth character of my string is ", my_str[10])
```

Poll Question:

```
1
2
```

A

Poll Question:

```
1
2
```

A

Poll Question:

```
1
2
```

A