

More expressions (class slides)

CSc 110 More expressions

Review of previous expressions

Evaluate the expressions below:

```
4 * 4 / 2 % 2  
( 2 + 3 ) / ( 2 - 1.5 )  
3**3 // 7  
5**2 + 25**0.5
```

Review of previous expressions

Evaluate the expressions below:

```
4 * 4 / 2 % 2
```

0.0

```
( 2 + 3 ) / ( 2 - 1.5 )
```

10.0

```
3**3 // 7
```

3

```
5**2 + 25**0.5
```

30.0

Comparisons

- What will be the result of the following expressions:

```
8 == 7  
8 < 7  
8 > 7
```

- What are the other two comparison operators?

Comparisons

Expressions with comparisons operators are evaluated to **True** or **False**

- == equal
- != different
- >= greater or equal
- > greater
- <= less or equal
- < less

Write a function

1. Its name is **odd** and it takes one integer argument **n**
2. It **returns** **True** if **n** is odd, **False** if **n** is even

```
print( odd(10) ) # False  
print( odd(5) ) # True  
print( odd(0) ) # False
```

Write a function – solution

```
def odd(n):  
    return n % 2 == 1  
  
def main():  
    print( odd(10) ) # False  
    print( odd(5) ) # True  
    print( odd(0) ) # False  
  
main()
```

False
True
False

Save your .py file as `odd.py` and submit it to Gradescope for attendance.

Comparisons

Expressions with comparisons operators are evaluated to **True** or **False**

- `==` equal
- `!=` different
- `>=` greater or equal
- `>` greater
- `<=` less or equal
- `<` less

Evaluate the expressions

```
3**2 < 25**0.5  
9 % 3 == 8 % 2  
10 // 3 > 9 // 3  
14 % 2 != 15 % 2
```

Evaluate the expressions

```
3**2 < 25**0.5
```

False

```
9 % 3 == 8 % 2
```

True

```
10 // 3 > 9 // 3
```

False

```
14 % 2 != 15 % 2
```

True

not

Expression	Result
not True	False
not False	True

and

Expression	Result
True and True	True
False and True	False
True and False	False
False and False	False

or

Expression	Result
True or True	True
False or True	True
True or False	True
False or False	False

and, or, not

- What will be the result of the following expressions:

```
not True
```

```
True and True  
True or True
```

```
False and True  
False or True
```

```
False and False  
False or False
```

and, or, not

- What will be the result of the following expressions:

```
not True
```

```
False
```

```
True and True
```

```
True
```

```
True or True
```

```
True
```

```
False and True
```

False

```
False or True
```

True

```
False and False
```

False

```
False or False
```

False

Evaluation order

- (expressions...)
- ****** : Exponentiation
- *****, **/**, **//**, **%** : Multiplication, Division, Floor Division and Remainder
- **+**, **-** : Addition and subtraction
- **<**, **<=**, **>**, **>=**, **!=**, **==** : Comparisons
- **not x** : Boolean NOT
- **and** : Boolean AND
- **or** : Boolean OR

Evaluate the expressions

```
not 2**3 == 8 and 4 % 2 == 0
25*0.5 > 5**2 or 4 <= 2**2
4 % 2 == 0 or 4 // 0 == 0
4 % 2 != 1
```

```
not 0  
not 1
```

Evaluate the expressions

```
not 2**3 == 8 and 4 % 2 == 0
```

False

```
25*0.5 > 5**2 or 4 <= 2**2
```

True

```
4 % 2 == 0 or 4 // 0 == 0
```

True

```
4 % 2 != 1
```

True

```
not 0
```

True

```
not 1
```

False