

Intro to programming II

Week 2 - review

Functions

- Block of code that we can execute 'later'
- The syntax of a function is

```
def name(arg0, arg1):    # function header
    <function body>
    return <value>
```

- A function name has the same restrictions as a variable name
- The return statement forces the function to terminate immediately
- If a function does not have a return statement or if the return is not followed by a value, the function, by default, returns the value None

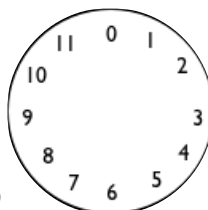
```
def rectangle_area(width, height):
    area = width * height
    return area
```

```
print(rectangle_area(3, 4))
>>> 12
```

Modular Arithmetic

A.k.a. clock arithmetic because it resembles the arithmetic done with a clock. To make the resemblance correct, though, we have to use of a clock that is numbered from 0 to 11 instead of 1 to 12:

With this clock we can learn modulo-12 arithmetic. The idea is simple: to find the modulo 12 of a number n we start at 0 and advance n steps around the clock. The symbol for the modulo operator is $\%$. Therefore:



```
print( 0 % 12)    # 0
print(10 % 12)    # 10
print(12 % 12)    # 0
print(13 % 12)    # 1
print(-1 % 12)    # 11
```

Integer division

The Integer division gives us a quotient that tells us how many times a number fits into another; the modulus operator gives us a remainder tells us how much is left of n after we fit it into another number:

```
print(49 // 10)
>>> 4           # quotient
print(49 % 10)
>>> 9           # remainder
```

Booleans:

- A boolean is a value that is either True or False
- The boolean operators are not, and and or.
- Boolean expressions accept parenthesis

```
a = True
b = False
print( (a and b) or (a and not b)) # True
```

Comparison operators

- Expressions that use comparison operators yield boolean values
- The comparison operators are
> >= < <= == !=

```
print(5 > 3)           # False
print('hello' == "hello") # True
```

Conditionals

- Directs the flow of a program
- It always starts with an if statement
- It may contain any number of elif statements
- It may finish with a single else statement

```
if weather == 'sunny':
    go_surf()
elif weather == 'snow':
    go_snowboard()
else:
    watch_tv()
```