CompSci 101 Main, Functions, Import, Random, Conditionals

#### **Announcements**

- Upcoming due dates
  - Sakai quizzes 1-4: 2/4 @145pm.
  - All future quizzes due @145pm day of lecture
  - Assignment 0-TODAY @1130pm
  - Assignment 1-released today (due 2/11 @1130pm)
  - Last day to register (TODAY)-can't change labs without permission #
    - https://www.cs.duke.edu/undergrad/registration
- Consulting hours vs. office hours
- Piazza channel

1 2

## **D** is for ...

- Design
  - Great programs are the result of great designs. (KISS principle)
- Decomposition
  - $\bullet$  Breaking down a problem/task into smaller subproblems/subtasks
- Debugging

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- A key skill in making your programs run
- Data (Science)
  - Creating information from 0's and 1's



Computer Scientists to Know

- Dr. Mark Dean
  - Dean of Engineering, University of Tennessee
     Tennessee
     Tennessee
     Tennessee
  - Former chief engineer (IBM)



- Mrs. Angie Jones
  - Principal Automation Architect
     Applitools (Test Automation Univ)
  - Master Inventor-25 patents



# **PFTD**

- Main
- Functions
- Import
- Conditionals
- $\mbox{\ensuremath{\bullet}}$  "The mere imparting of information is not education."
  - Dr. Carter G. Woodson

Why do we need this statement?

uuu

Created 1/25/2021

@author: anw

unn

if \_ \_name\_ \_ = = ' \_ \_main\_ \_':

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# WOTO 1: http://bit.ly/101s21-0202-1

```
if __name__ = = '__main__':
    name == "Jeff'
    hours = 15
    rate = 15

# Calculate and output total pay
    totalPay=hours*rate
    print("Total Pay for "+ name + "=$" + str(total_Pay))
```

Functions-Why Do We Need Them?
All to signify latins (all the signify latins)
I got gloss on my lips, a man on my hips
I got gloss on my lips, a man on my hips

All the single ladies (all the single ladies All the single ladies (all the single ladies All the single ladies (all the single ladies All the single ladies Now put your hands up

Now put your hands up

Up in the club, we just broke up

Im doing my own little thing

You decided so dip but now you wanna trip

Cause another brother noticed me

Im up on him, be up on me

Don't pay him any attention

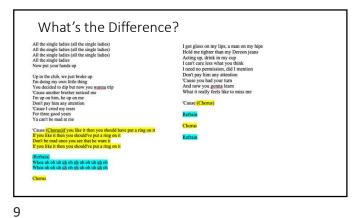
Cause I cried my tears

For three good years

or three good years a carri be mad at me aure if you like it then you should have put a r you like it then you should ve put a ring, on it you like it then you should ve put a ring, on it you like it then you should ve put a ring on it flow uh oh uh uh oh oh uh wh uh uh oh flow uh oh uh uh oh oh uh uh oh oh uh uh uh oh I got gloss on my lips, a man on my hips Hold me tighter than my Dereon jeans Acting up, drink in my cup I can't care less what you think I need no permission, did I mention Don't pay him any attention Cause you had your turn And now you goman learn

ause if you like it then you should have put a a you like it then you should we put a ring on it on't be mad once you see that he want it you like it then you should've put a ring on it

hoa is hol ish up hol oo his hol ish us up hol oo ish you like it then you should have put a ring on it you like it then you should ve put a ring on it on't be mad once you see that he want it you like it then you should ve put a ring on it.



# Benefits of Functions

- Easier to
  - Read/understand
  - Modify
  - Test
- Debug
- Pro tip: Look for any repetition in your programs

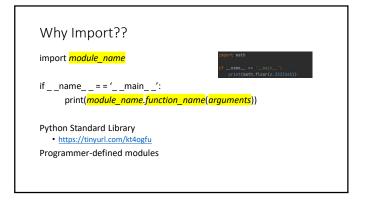
10

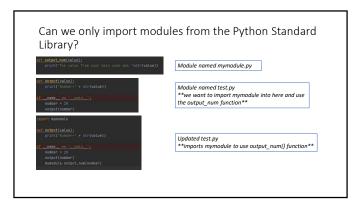
# Creating/Using Functions 1. Define the function (How it works) 2. "Call" the function (Using it) def functionName(parameters): if \_\_name\_ \_ = = '\_\_main\_\_': variable=functionName(arguments)

# WOTO 2: http://bit.ly/101s21-0202-2

- Update this program to:
- Create function
- calculate\_pay
- Calculates/outputs pay for each
- Use *calculate\_pay* in program to update this program

11 12





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# random numbers random.random() Return floating point number in range [0.0, 1.0) random.randint(a, b) Return random integer N such that a <= N <= b</li> How would we simulate rolling dice?

WOTO 3-http://bit.ly/101s21-0202-3

• Modify this code to simulate rolling two dice

• Requirements

• Generate values for two dice

• Output values of each die

• Call function output to calculate and output sum of dice

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# Selection/Conditionals: if...elif...else if BOOLEAN\_CONDITION: if BOOLEAN\_CONDITION: if BOOLEAN\_CONDITION: CODE\_BLOCK\_A else: CODE\_BLOCK\_B elif BOOLEAN\_CONDITION: CODE\_BLOCK\_B else: CODE\_BLOCK\_C

WOTO 4: http://bit.ly/101s21-0202-4

- Extending your program from WOTO 3
- Simulate rolling two dice
  - "Roll" two dice
  - Results of the rolls sent to function named sum
    - Sum dice values
    - If sum is 7 or 11, then output "You win!"
      Otherwise, output "Next time!"

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## Remember

- Work smarter, not harder
- Design first
- Try to identify where you are stuck
  - Identify resources to help solve problem
- Leverage your design and PythonTutor to understand program flow of control
  - http://pythontutor.com