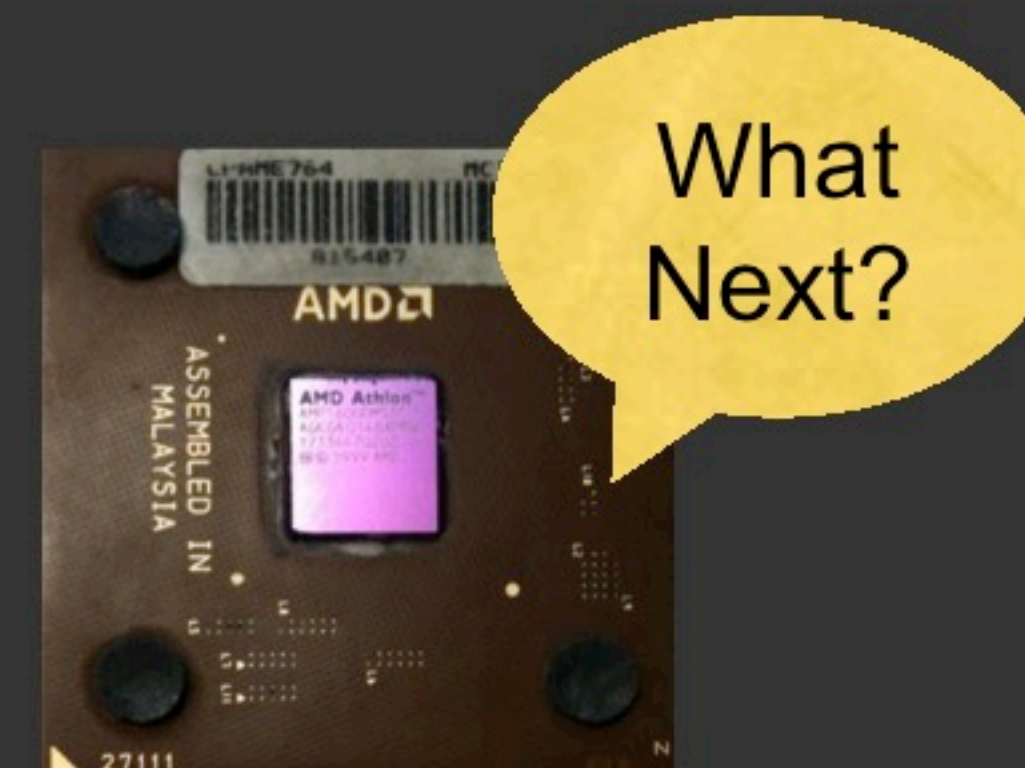# Why Program?

Chapter 1

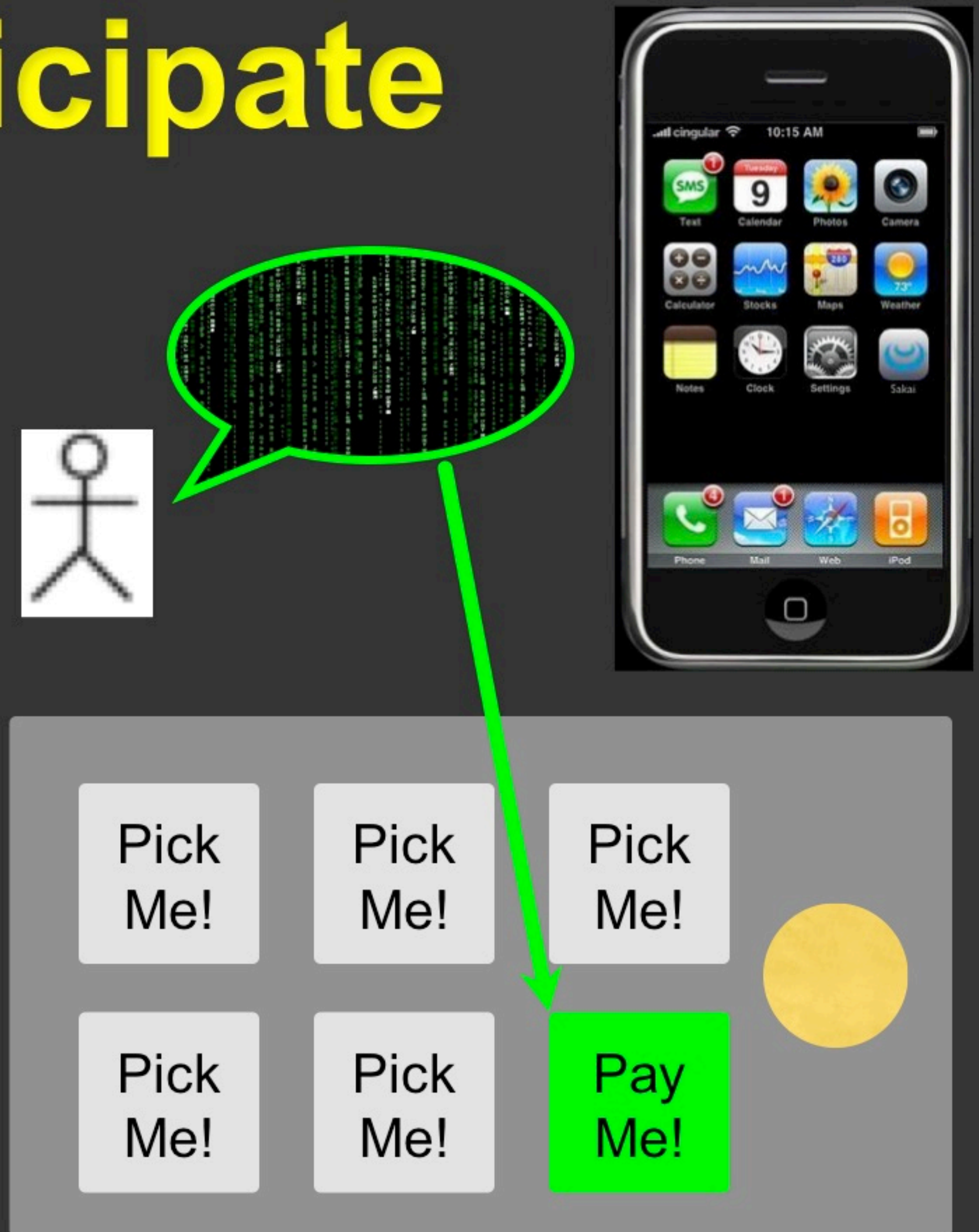Python for Everybody

www.py4e.com

Computers want to be helpful...

- Computers are built for one purpose - to do things for us

- But we need to speak their language to describe what we want done

- Users have it easy - someone already put many different programs (instructions) into the computer and users just pick the ones they want to use

What Next?

What Next?

What Next?

What Next?

What Next?

What Next?

What Next?

Programmers Anticipate Needs

- iPhone Applications are a market

- iPhone Applications have over 3 Billion downloads

- Programmers have left their jobs to be full-time iPhone developers

- Programmers know the ways of the program

Pick Me! Pick Me! Pick Me!
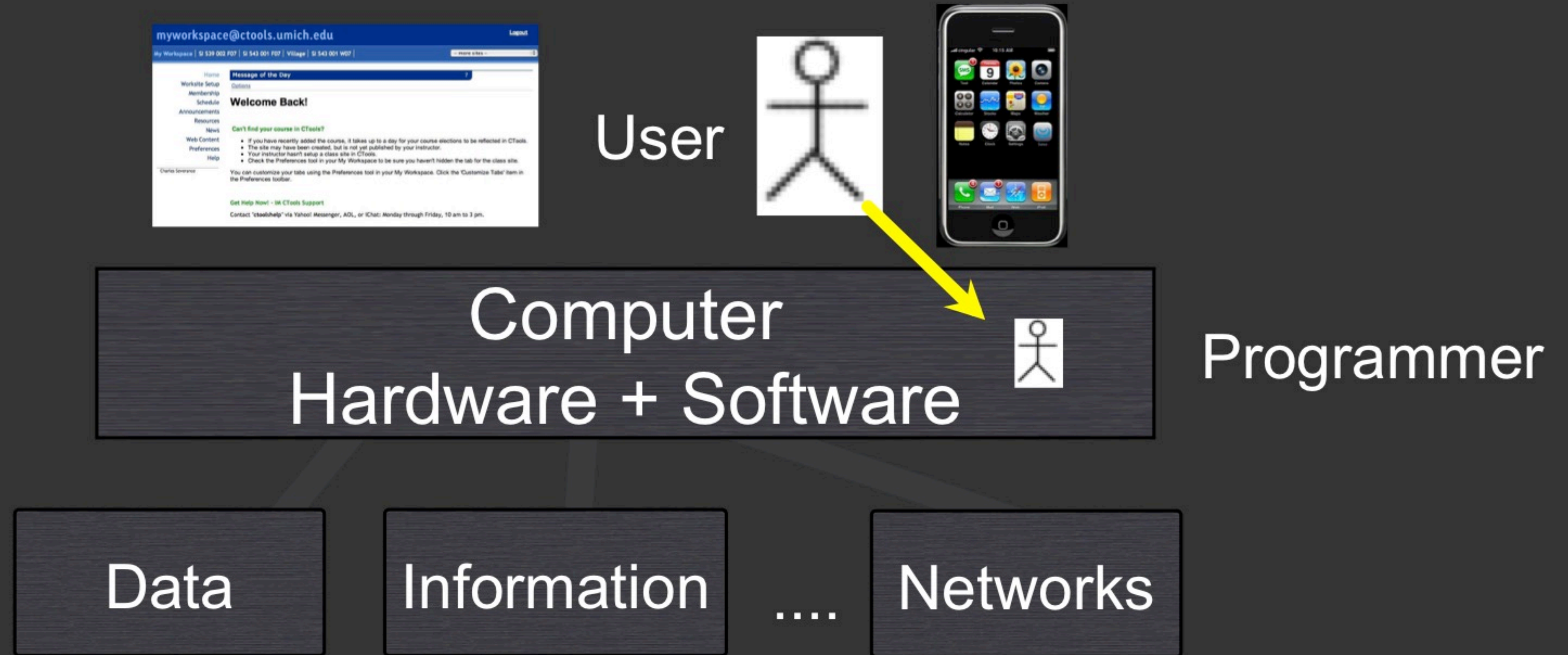
Pick Me! Pick Me! Pay Me!

Users vs. Programmers

- Users see computers as a set of tools - word processor, spreadsheet, map, to-do list, etc.

- Programmers learn the computer "ways" and the computer language

- Programmers have some tools that allow them to build new tools

- Programmers sometimes write tools for lots of users and sometimes programmers write little "helpers" for themselves to automate a task

Why be a programmer?

- To get some task done - we are the user and programmer

  – Clean up survey data

- To produce something for others to use - a programming job

  – Fix a performance problem in the Sakai software

  – Add a guestbook to a web site

User

Computer
Hardware + Software

Programmer

Data   Information   ....   Networks

From a software creator's point of view, we build the software. The end users (stakeholders/actors) are our masters - who we want to please - often they pay us money when they are pleased. But the data, information, and networks are our problem to solve on their behalf. The hardware and software are our friends and allies in this quest.

What is Code? Software? A Program?

- A sequence of stored instructions

    – It is a little piece of our intelligence in the computer

    – We figure something out and then we encode it and then give it to someone else to save them the time and energy of figuring it out

- A piece of creative art - particularly when we do a good job on user experience

Programs for Humans...

https://www.youtube.com/watch?v=gwWRjvwILKg

Programs for Humans...

while music is playing:
  Left hand out and up
  Right hand out and up
  Flip Left hand
  Flip Right hand
  Left hand to right shoulder
  Right hand to left shoulder
  Left hand to back of head
  Right ham to back of head
  Left hand to right hit
  Right hand to left hit
  Left hand on left bottom
  Right hand on right bottom
  Wiggle
  Wiggle
  Jump

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  Right hand to left shoulder
  Left hand to back of head
  Right hand to back of head
  Left hand to right hip
  Right hand to left hip
  Left hand on left bottom
  Right hand on right bottom
  Wiggle
  Wiggle
  Jump

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Programs for Python...

the clown ran after the car and the car ran into the tent and
the tent fell down on the clown and the car

Image: https://www.flickr.com/photos/allan_harris/4908070612/ Attribution-NoDerivs 2.0 Generic (CC BY-ND 2.0)

Programs for Python...

Image: https://www.flickr.com/photos/allan_harris/4908070612/ Attribution-NoDerivs 2.0 Generic (CC BY-ND 2.0)

```python
name = input('Enter file:')
handle = open(name)

counts = dict()
for line in handle:
    words = line.split()
    for word in words:
        counts[word] = counts.get(word,0) + 1


bigcount = None
bigword = None
for word,count in counts.items():
    if bigcount is None or count > bigcount:
        bigword = word
        bigcount = count

print(bigword, bigcount)
```

python words.py
Enter file: words.txt
to 16

python words.py
Enter file: clown.txt
the 7