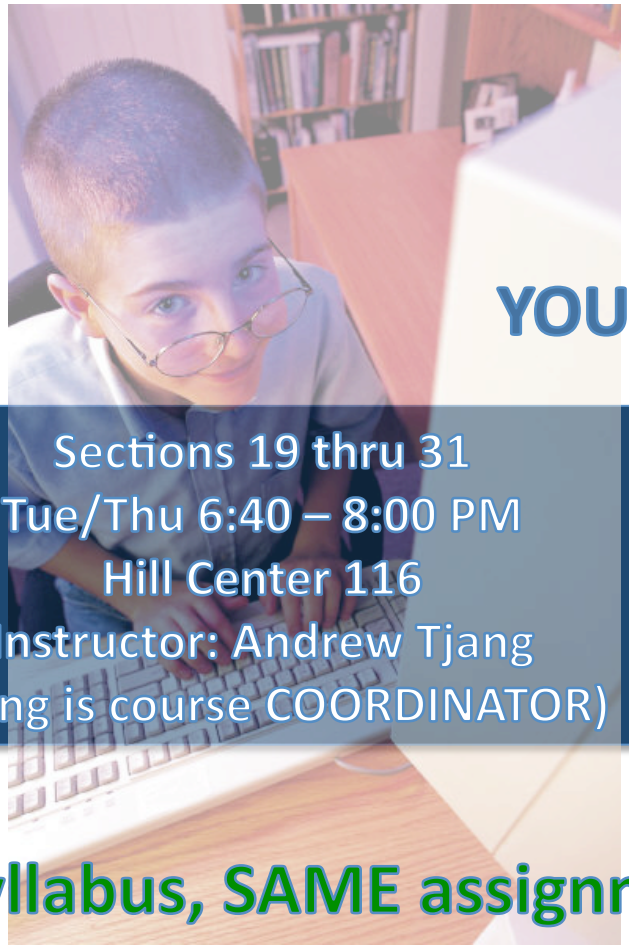
CS 111
Introduction to Computer Science

Fall 2011

Lecture 1: Thursday, Sep 1, 2011

Lecture and Instructor

Tue and Thu, 1:10 – 2:30 PM, Murray 210



Sesh Venugopal

venugopa@cs.rutgers.edu

YOU are in sections 01 thru 16

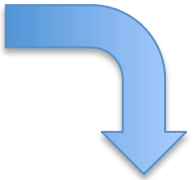
Sections 19 thru 31
Tue/Thu 6:40 – 8:00 PM
Hill Center 116
Instructor: Andrew Tjang
(Tjang is course COORDINATOR)

Sections 35 thru 45
Mon/Thu 12:40 – 1:20 PM
SEC 117
Instructor: Andrew Tjang

SAME syllabus, SAME assignment, SAME exams for ALL lectures

Recitations

Group Problem-Solving Exercises



Led by Undergraduate Peer Leaders

PARTICIPATION REQUIRED

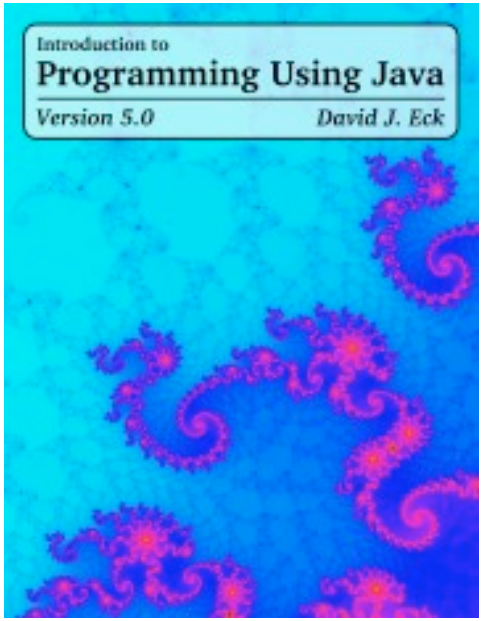
Recitations start week of September 12

Resources

http://www.cs.rutgers.edu/courses/111/classes/fall_2011_tjang

Syllabus, Policies, Staff, Announcements

FREE ONLINE textbook



http://sakai.rutgers.edu

Sakai @ Rutgers

Assignments
Grades
Announcements
Lecture Notes
Code Samples
… and more

What CS 111 is About

Learning to PROGRAM computers

To BUILD software

Using classic
Computer Science PROBLEM SOLVING techniques

You Should NOT be in CS 111 If…

You want to know what computers are and how they are used (Take **CS 110** – Introduction to Computers and Their Application)

You want to know what Computer Science is all about (Take **CS 105** – Great Insights in Computer Science)

You want to learn specific computing techniques for Math and the Physical Sciences (Take **CS 107** – Computing for Math and the Sciences)

You want to know how to use computers in business (Take **CS 170** – Computer Application for Business)

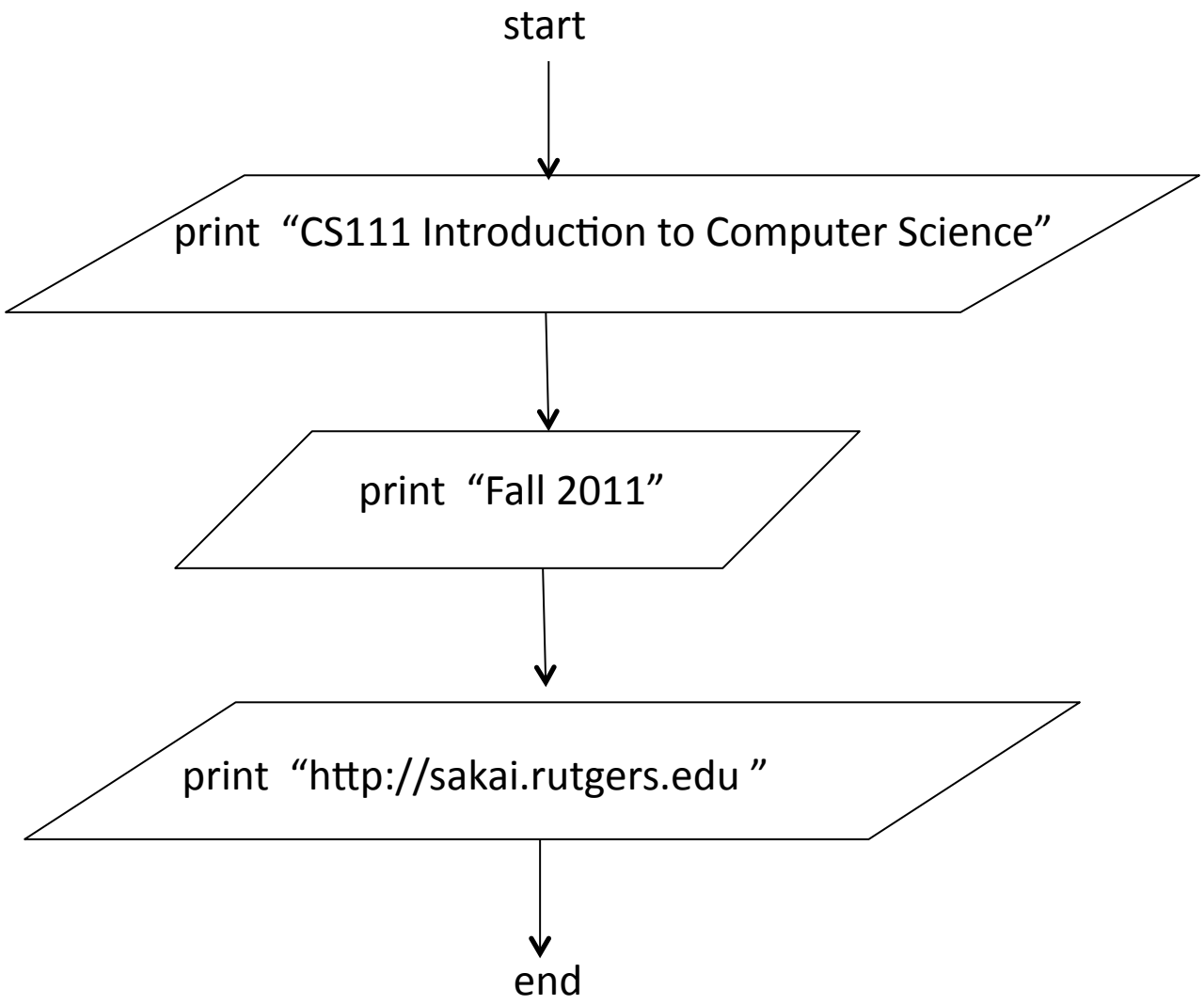
Basic Computer Skills You Are Expected to Know

- ✓ Using Email
- ✓ Using the Web
- ✓ Installing Software
- ✓ File Types (Zip, Text, Executable, etc.)
- ✓ Finding Files on the Computer
- ✓ Zipping Files
- ✓ Using Command Window/Terminal

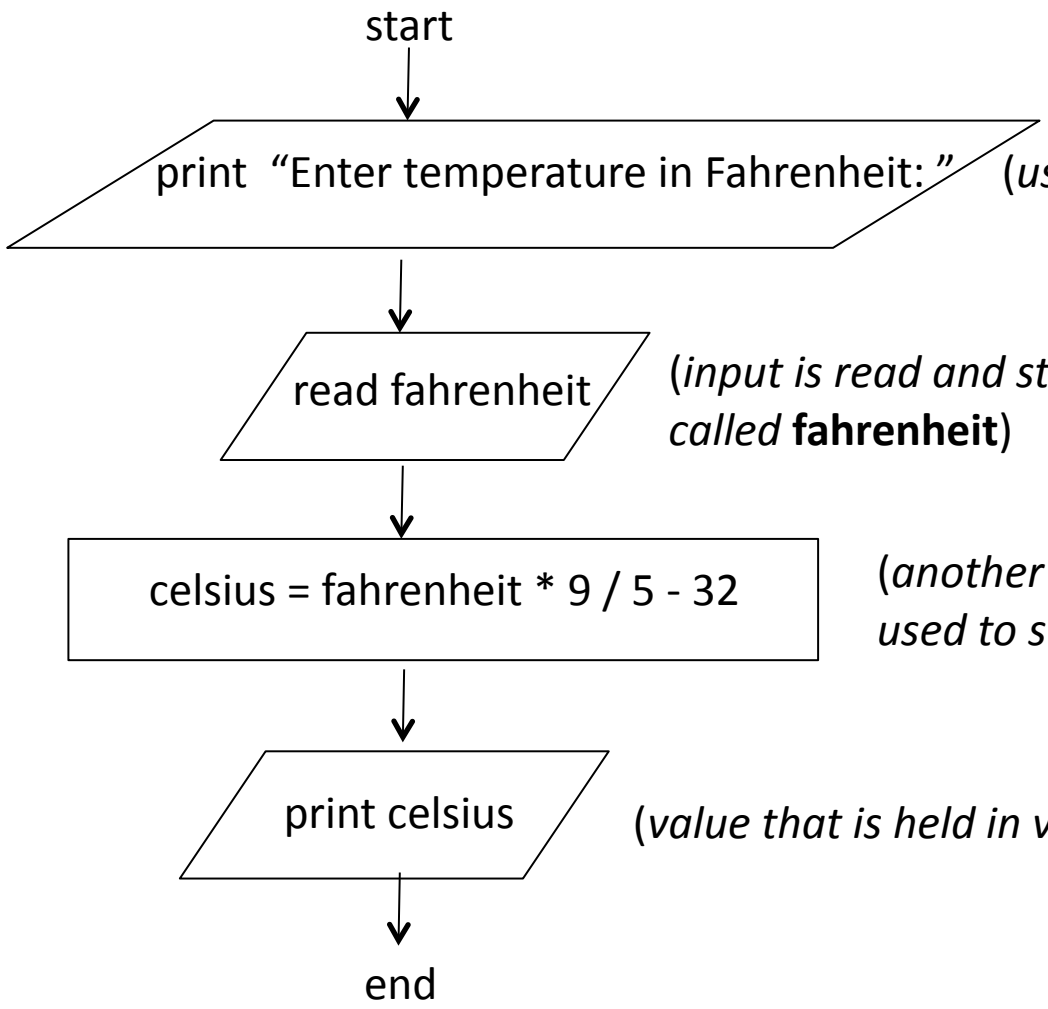
DESIGNING PROGRAM LOGIC

FLOWCHARTS

Printing Data/Information (Output)



Printing (output), reading (input), computing (processing)



Does The Program Work Correctly?

Check by running it for various input (fahrenheit) values, and compare the output (celsius) value against the expected (correct) value. This process is called TESTING

Input (Fahrenheit)	Output (Celsius)	Expected Result
32	25.6	0
100	148	37.78
-40	-104	-40
-300	-572	-184.44

The results of testing the program shows that it does NOT work correctly.

~~celsius = fahrenheit * 9 / 5 - 32~~

celsius = (fahrenheit – 32) * 5 / 9

Retest to confirm that this is correct

Are All Input (Fahrenheit) Values Acceptable?

The temperature of **-273.15** Celsius is called ABSOLUTE ZERO.

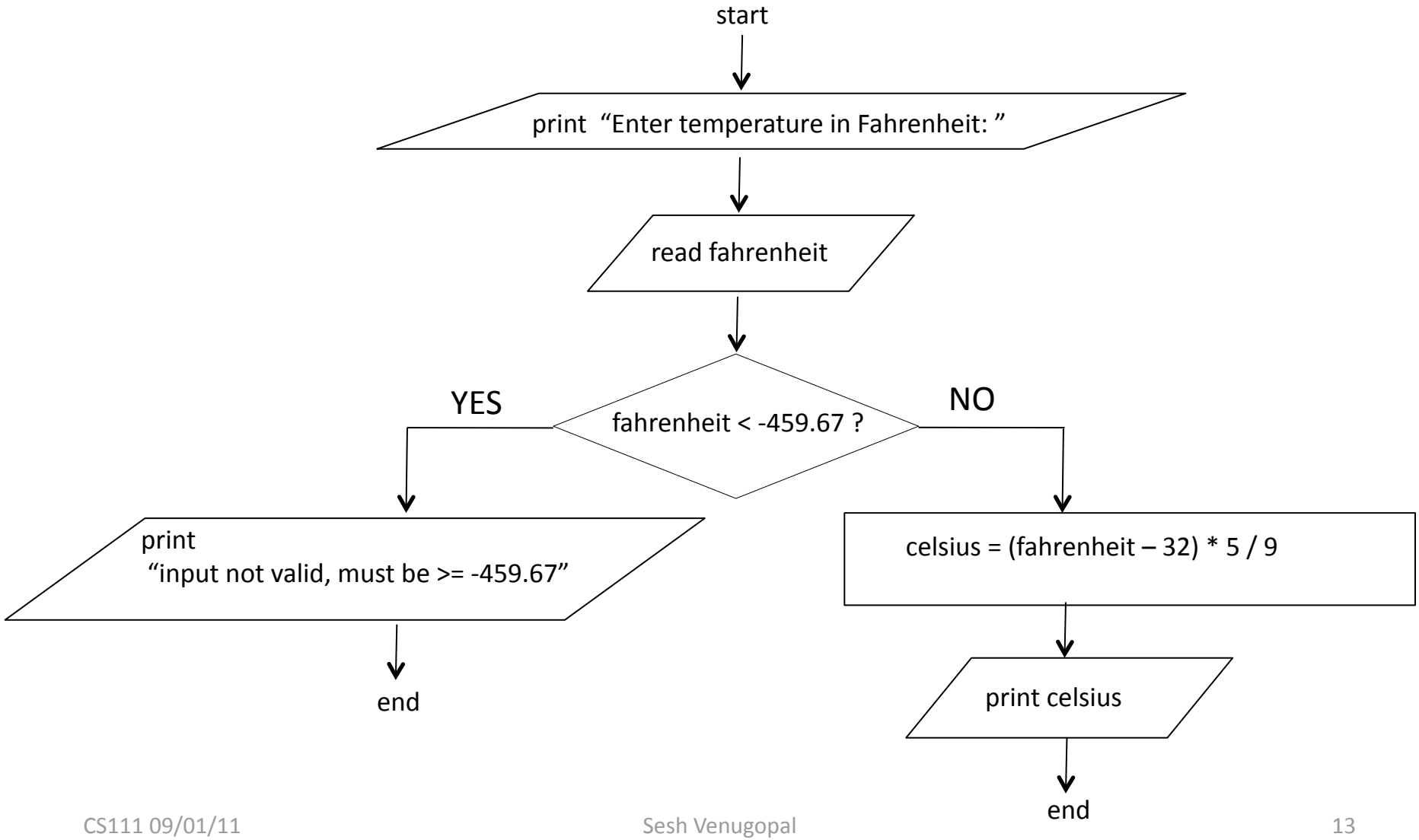
Molecular energy is minimal at absolute zero.

Absolute zero **cannot be reached** by natural or artificial means

-273.15 Celsius is equivalent to **-459.67** Fahrenheit –
any F values less than this would be below absolute zero.

Input values less than -459.67 are NOT acceptable to our program

Rejecting Unacceptable Input – Making a Decision (Yes/No)



Does The Modified Program Work Correctly?

TEST by running it for various input (fahrenheit) values, and compare the output (celsius) value against the expected (correct) value.

Input (Fahrenheit)	Output (Celsius)	Expected Result
32	0	0
100	37.38	37.78
-40	-40	-40
-300	-184.44	-184.44
-459.67	-273.15	-273.15
-500	Input not valid…	Input not accepted

ABSOLUTE ZERO

The results of testing the program shows that it works correctly.

CORRECTLY WORKING means producing correct results for valid inputs, AND rejecting invalid inputs WITHOUT CRASHING.

Equivalent Program: Flipping the Inequality in the Input Check