CS101 - Data Abstraction
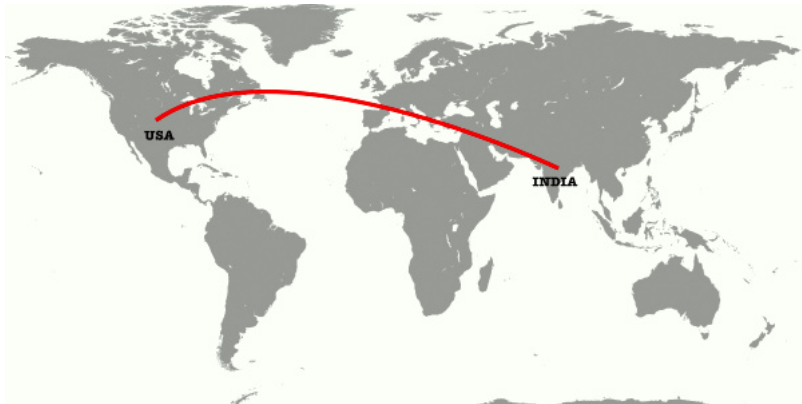## **An Introduction**

Aravind Mohan

Allegheny College

January 14, 2020

About me...

- My name is Aravind Mohan. Student's call me Mohan or Professor Mohan.
- Teaching at Allegheny for last three years.
- Worked as a programmer in companies such as Kaiser Permanente and Union Bank for 5 years between 2006 and 2011.
- Research in the field of Big Data and Cloud Computing last 10 years.

Roughly 10,000 miles...

- Tell us something about you.
- For example: tell us your name, the year you are in, your favorite movie and/or food, your hobby, or maybe about an interesting computer program you had written ...

Let us know each other ...

Meeting Time

- Lecture Session:
    - Tuesday and Thursday
      9:30 AM - 10:45 AM, Alden 101
- Lab Session:
    - Wednesday 2:30 PM - 4:20 PM, Alden 101

- Mondays, Wednesdays, and Fridays:
  11:00 AM - 12:00 PM
- Thursdays:
  11:00 AM - 12:30 PM & **2:30 - 4:00 PM**

Send an email to schedule time outside office hours.

To schedule an office hours time slot, please visit my website [teaching page] and click on the
Schedule Meeting link located on the top right-hand corner to schedule 15 mins slots.
Let us connect to each other and enjoy our time together...

Website Details

- Professor's Website:

  https://www.cs.allegheny.edu/sites/
  amohan/

- Course Website:

  https://www.cs.allegheny.edu/sites/
  amohan/course.php?cid=MTI=

Administrative Stuff!

- No Lab this week.

  First lab next week on Wed, 22nd Jan 2020.

- My regular office hours start next week.

  To meet this week, feel free to schedule a time based on your availability.

- Do you have an Add Card? Please bring it to my office after class.

- Laboratory Assignments

Administrative Stuff!

- Laboratory Assignments
- Skill Tests **upto three**

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  Mastery Quizzes given on random days.

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- Class Participation

Administrative Stuff!

- Laboratory Assignments
- Skill Tests **upto three**
- Exams **upto two**
- Course Project
- Attendance will be taken through

  Mastery Quizzes given on random days.

- Class Participation

Please read the **Syllabus** to get an overview of the course.

Administrative Stuff!

Lab Assignments	25%
Skill Tests	10%
Midterm Exam	15%
Final Exam	20%
Course Project	15%
Attendance	5%
Class Participation	10%

More details available in **Syllabus**.

- Attentively listen to classes and try to participate in all class discussions.
- Bring a notebook with you and start making detailed notes during every class period.
- Clarify with the Professor, if a lesson is confusing.
- Complete all the reading assignments thoroughly.
- Do the in-class exercises efficiently.

Be ready to **think**, **process**, and **code** in this course!

Interaction between us...

- Any question is a valid question. There is no question which is good and bad. So, questions are always welcome.
- Due to my peripheral vision restrictions, I might not notice if you raise your hand. The best way of getting my attention is to stop me and ask your question aloud.
- Interaction is the best way to get rid of long lectures. So, let us try to interact more so that the communication is a two way process and the class is not boring.

Let us work together to make sure we retain **Programming Knowledge** from this course.

What is a Program?

- A program is a collection of instructions that performs a specific task when executed by a computer.
- Program is written using any programming languages such as Java, C, C++, C#, Python, and so on ...

A program is usually written to manipulate data.
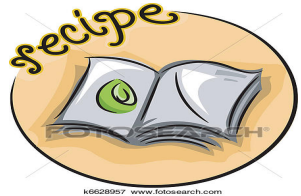
What is Data?

- Data is just raw fact. It has no meaning.
- For example, **1010** is data, no meaning right?
- The statement `age = 1010` is called an assignment. This is information.
- `age = 1010;`
  `System.out.println(age);` is a program.

Data is useless without a program.

(a) Ingredients **(Input Data)**

(b) Recipe **(Program)**

(c) Indian Chicken Biriyani **(Output Data)**

(d) Cook **(Programmer)**

By end of this course, you'll in general

- Be prepared to take any programmatic requirement and solve it the Object-Oriented way.
- Master a variety of data representation techniques.
- Learn how to assess performance of a program.
- Be well equipped to program in advanced courses such as Algorithms, Software Engineering, Robotics, Databases, Cloud Computing, and so on ...
- Sharpen your coding skills.

- We will mainly use Java in this class.
- Do you have Java installed on your laptop? If not no issues. You can use an online compiler for today.
- Install Java on your laptop. Come see me if you have issues.

Ready to do a simple program?

Talk to your peers and brainstorm ideas to come up with at least one problem that you like to develop a computer program for?

- Sign up for course slack channel. (Link accessible at the course webpage!)
- Post your first Slack message. Individually summarize your Programmatic idea and post a message.
- Read the Syllabus before next class.