Talking to a Turing Machine

ESC101: Fundamentals of Computing Nisheeth

This Course

- Introduction to computer programming/logic-based computing using the C Programming Language
- Course Name: Fundamentals of Computing (ESC101), 14 credits
- Instructor: Nisheeth (CSE Department)
 - Email: <u>nsrivast@cse.iitk.ac.in</u> (don't miss the "cse")
 - For this course, will prefer all communication via Piazza (Piazza supports private messages to instructors/students)
- Tutors: 16 regular + 3 admin + 1 faculty tutor
- **TAs: 80**
- Students: 532



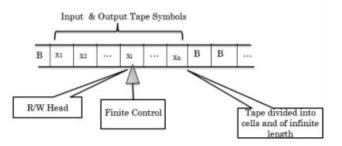
Purpose of This Course

- Learning how to program using C programming language
- Will do it with a mix of theory (lectures) and practical (programming labs)
- Focus primarily on C programming but most concepts we will study apply to programming/logic-based computing in general
- Assumes no prior background/exposure to programming
 - If you already have good proficiency in C programming, there will be an option of switching to Advanced Track (more info in later slides)

Talking to a Turing machine

- How do you talk to a human?
- If both know the same language
 - Talk using the shared language
- If both don't know the same language
 - Talk using shared body language
- If both don't know the same language and can't see each other
 - Can't really communicate

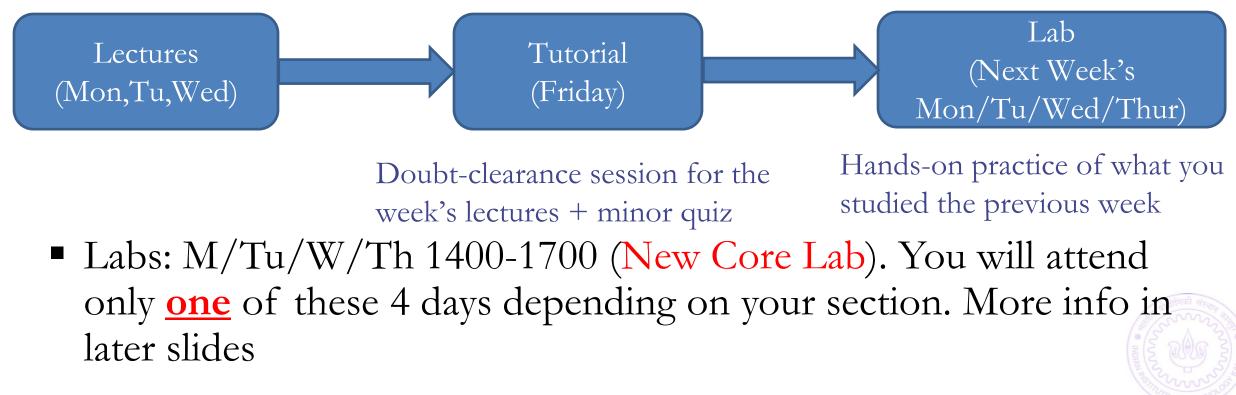
THE TURING MACHINE MODEL



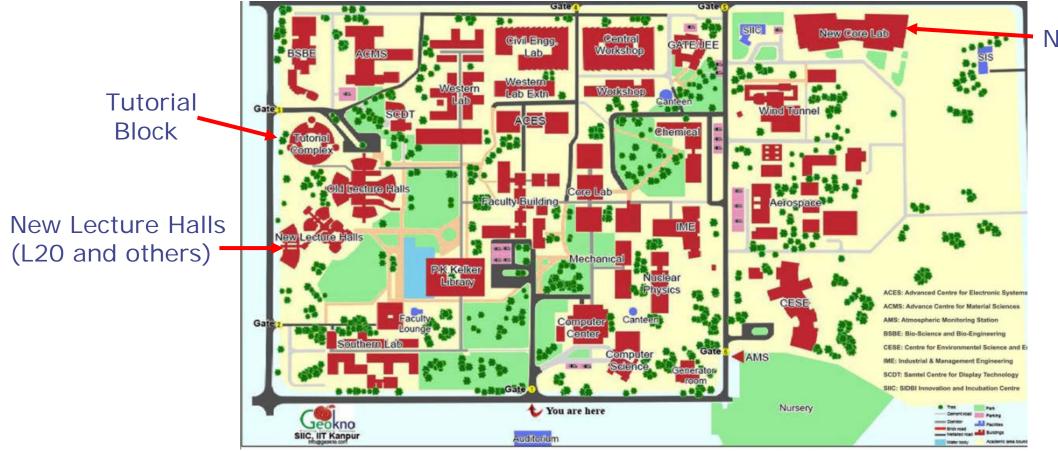
- How do you talk to a Turing machine?
- It has no body
- Have to talk to it in its language
- Need to learn its language
 - Or a language that can be automatically translated to its language

Course Schedule

- Lectures: M, Tu, W 1200-1300 (in L-20)
- Tutorial: Fri 1200-1300 (Tutorial Block rooms). More info in later slides



The Locations



New Core Lab



Admin and Faculty Tutors



Hrishikesh Terdalkar hrishirt@cse.iitk.ac.in

Hindi, Marathi, English (Admin Tutor)



Shubhangi Agarwal sagarwal@cse.iitk.ac.in

Hindi, English (Admin Tutor)



Nitin Kumar Singh nitinks@cse.iitk.ac.in

Hindi, English (Admin Tutor)



Dr. Biswabandan Panda biswap@cse.iitk.ac.in

Hindi, Odia, English (Faculty Tutor)

Tutorials

• Tutorial (Every Fri 1200-1300): The tutorial room for each section

A1	TB103	A5	TB107	A9	TB111	A13	TB205
A2	TB104	A6	TB108	A10	TB112	A14	TB207
A3	TB105	A7	TB109	A11	TB203		
A4	TB106	A8	TB110	A12	TB204		

- Tutorial will have doubt clearing session + examples on lecture material
- For some tutorials, last 10-15 minutes may have a surprise minor quiz
 - The minor quizzes will be graded
- First tutorial on Friday this week



Labs

Lab days for each section will be as follows

Monday	Tuesday	Wednesday	Thursday:
A4, A5, A6, A13	A1, A2, A3	A7, A8, A9	A10, A11, A12, A14

- In each lab, you will solve some programming problems
- You will solve them on **Prutor** website (developed at IITK)
- Lab will start at 1400. Must finish by 1700. Your solutions will be graded
- First week's lab: Not graded. Just familiarize yourself with Prutor system

Labs

- Must solve lab questions on your own
- Can share ideas for solving problems, but not code
- Practice Set: Released each week to help students prepare for next week's lab problems
- Each lab will have TAs for invigilation/logistical help
- If no lab due to a holiday, will have a make-up lab on weekend (Sat/Sun)

Grading Scheme

- Minor Quizzes (best 8 of total 10): 8%
 - Conducted during tutorial hours
- 2 Major Quizzes (29 Jan, 23 Mar): 10%
 - Conducted during lecture hours
- Mid-sem Theory Exam: 15%
 - Date will be announced by DOAA
- End-sem Theory Exam: 25%
 - Date will be announced by DOAA
- Lab Assignments (best 10 of total 13): 10%
- Mid-sem Lab Exam: 15%
 - Date: Feb 15
- End-sem Lab Exam: 17%
 - Date: Apr 18

Theory: 58%

Practical: 42%



Useful Links (please bookmark them)

Course Website

 Course website: https://www.cse.iitk.ac.in/users/nsrivast/esc101.html

All course material will be posted here (slides, quiz/exam solutions, etc). Also refer to the webpage for other information (Policy etc)

Lab Website (Prutor)

- <u>https://esc101.cse.iitk.ac.in</u>.
- Will be using it for weekly lab exercises, lab exams, lab practice, etc
- Your marks for weekly labs and lab exams will also be shown on Prutor
- Accessible only internally from IITK. For external access, will need proxy

Prutor	
Intelligent Tutoring System For Programming	
ESC101	User I
	Passwo
Sign In	
USER ID	
Password	
→ D Login	





Online Discussion Webpage (Piazza)

- Accessible from anywhere (also has a mobile app)
- Can set message notifications to real-time or digest mode

piazza	ESC 101 - Q&	A Resources Statistics	Manage Class			
announcement 🙃 prutor 👧 project 🛐	exam 🔟 logistics 👩) other 🔃 quiz 🕕 lab 🕻) tutorial 🚺 lecture 🚺	general 🚳		
Unread Updated Unresolved Following	¢.					
New Post Q. Search or add a post			Cla	ss at a Glance Updated 19	assauda and Dalaad	
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Private Search for Teammates!	12/21/18			262 unread posts		total posts
						total contributions instructors' responses
* WEEK 5/26 - 6/1				21 unanswered questions		students' responses
Private Prutor Archives Sir, For future reference, can you make the Prutor problem archives of our ESC101 course available for us7Thank you!	5/29/19			2 unresolved followups	40 min	avg. response time
• WEEK 5/12 - 5/18				udent Enrollment		out of 550 (estimated)
Grade cutoffs and other things	5/18/19		48	2 enrolled		
Hi,1 am the instructor of the previous offering of ESC101. Although I thus far refrained from comment on this forum, rec					Down	load us in the app store: 📫 App Store 🕨 Cxxx
* WEEK 5/5 - 5/11						
Instr Grade related I think the final grades got released today (from the sudden influx of emails regarding the course). So, fm clanty	5/11/19			piazza LECTURE SERIES		ES PIOZZO LECTURE SERIES
* WEEK 4/28 - 5/4						
Private Regarding regrading reques Srr,My regrading request has not been reviewed yet please review it.	4/30/19			Driving Student Engagment in Large Classes with Piazza	Engaging Women in STEM Fields on Piazza	Engaging Small Discussion Based Classes on Piazza
Endsem answer key doubt	4/29/19					
Sir, in qn 3.1 (b) Question asks whether return statement implicitly typecasts variables to match function given return				Spotify	Apple Podcasts	Play Music
Instr Check the rubric before sub	4/29/19					
Please note that the rubric will not be changed at this point unless there is an absolute need to to do so. Check the ru					Share Your Clas	S
Q 1.1 set B	4/29/19			ofessors appreciate Piazza best when the		
As the statement is already mentioningin big o notation, i wrote only the expression nlogn and not o(), should it be			stu	ow colleagues to view your class through dents' names are anonymized and all stu	udent information hidden.	ead only version of your class where all
Point Adjustment while grading	4/29/19		htt	tps://plazza.com/demo_login?nid=jpxrejsj3ve	c2eg&auth=a110bba	
In Q2.2, Set A, I have got 3 marks for point	2			Opening this link in	the same browser will log you or	ut as piyush@cse.iitk.ac.in

Have already added you (using your IITK email id). Please choose a password and start using Piazza



Course Mailing List

esc101a@iitk.ac.in

- You must already be signed up for this list (with your IITK email)
- All course-related announcements will be sent on this (and on Piazza)

Only instructors can post messages on this mailing list (you can only receive messages)



Textbooks

- Several nice books on C. You may pick one of these
 - Schaum's Outline of Programming with C by Byron Gottfried, McGraw-Hill India.
 - The C Programming Language by Kernighan and Ritchie, PH India.
 - Refer to course website for some other references
- Advice: Pick one reference book and stick to it throughout



Advanced Track (AT)

- For students who already have good proficiency in C programming
- Can replace minor quiz and labs with a project (18% course weightage)
- Candidates for this track are being selected with a C programming based screening test.
- Even if selected for AT, can re-join regular track by Mar 25th, 2020
 - With satisfactory project evaluation: 100% score on missed quizzes/labs
 - With unsatisfactory project evaluation: Average class score on all missed assignments

Some Course-related Policies (please follow them carefully) (more info on course website)

Policy on Conduct of Labs/Quizzes/Exams

- Quizzes/exams will be open handwritten notes. You may bring your notebook (must use your own notes)
- No printed/photocopied material or electronic material will be allowed in quizzes/exams
- During lab hours, only students sitting inside NCL labs will be able to access Prutor
- But outside of lab hours, Prutor is available at CC/NCL/Halls, etc



Copying

- Please be sincere and honest. Please do not copy.
 - .. in any component (lab/quiz/exams/lab exams)
- If you are caught, you get penalized on grade (most likely F/D grade).
 - Will not be allowed to drop the course
 - Case reported to DoAA/SSAC
 - No warning or second chance
 - All parties involved in copying will be held equally responsible.
 Copying from internet is penalized equally.
 - Policy may change on need basis



Copying: How to Avoid?

- Read-protect your directories so that others cannot copy from your directory
- Do not share your CC password with friends
- Do not leave printouts, notes etc. containing your code unattended
- Never hard code inputs in your program (more on this later in the semester)
- Use of electronic devices such as mobile phones, tablets, smart watches, etc is not allowed during labs/quizzes/exams and will count as cheating
- Refer to the course webpage for more information



Absentee Policy

- Absence from a quiz/lab/exam, requires <u>approval</u> from SUGC/Instructor
- Minor quizzes: No makeup. Best 8 out of 10 quizzes to be counted.
- Major quizzes: **Prorated** from the nearest future mid-sem or end-sem exam
- Labs: No makeup. Best 10 out of 13 quizzes to be counted.
- Mid term lab exam: Prorated by final lab exam
- Final lab exam: Prorated by End sem exam
- Mid-sem: **Prorated** by End-sem.
- End-sem: Makeup, as per DoAA's schedule



Course Drop Policy

- Must get course drop applications approved by the instructor by Mar 20, 2020 after giving proper reason for said drop.
- Drop applications must be filled out on the standard SUGC drop form
- Mar 20, 2020 is a senate deadline. Can't drop after this deadline
- Instructor can't ensure approval of a drop by DUGC convenors or SUGC

Acknowledgement

- Previous instructors of ESC101
 - Piyush Rai, Purushottam Kar, Swaprava Nath, Indranil Saha, Amey Karkare, and others
- Amey Karkare and his students (especially Umair Ahmed) for Prutor and autograding features of Prutor

