Problem Solving using Computers

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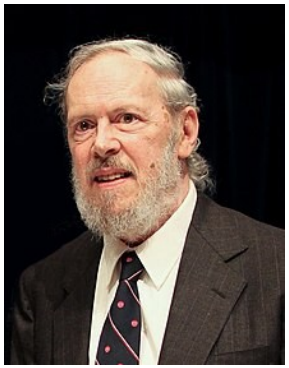
Thanks

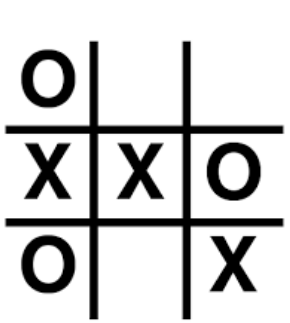
- All the Mentors
- Replit and Online Degree Team
- DCF and our Technical Staff
- Department, Academic Section
- You.

Placement in Computer Science

- **CS1111: Problem Solving and Coding**
- CS1200: Proofs, Counting
- CS2200: Computation Theory
- CS2300: Overview of Digital World
- CS2600: Hardware
- CS2700: Efficient Implementation
- CS2800: Algorithms
- CS3100: Ways of Programming
- CS3300: Translation (Programmer and Machine)
- CS3500: Resource Management (User and Machine)

CS1111 is a foundational subject feeding into all the other CS courses.





What is Ukraine‘s ISD code?

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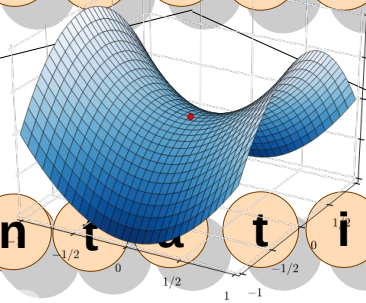
???

Ifmmp!Xpsme"

Problem

...

A p p r o a c h e s



Future Connect:
break is also used to come out of loops.

Binary Search

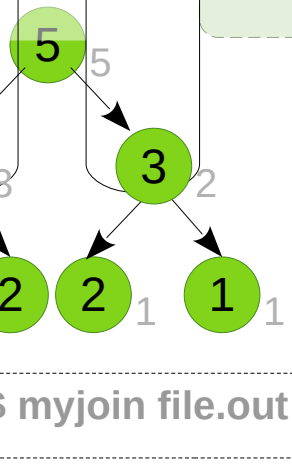
-2[p]

I m p l e m e n t a t i o n s

stack heap

-3 -9 -7 -4 -59 9 58 22 43 4 0 74 55 33 23.8 2 53

Stateful



swap x 3460 3464 y

6384 6388

This statement is wrong.

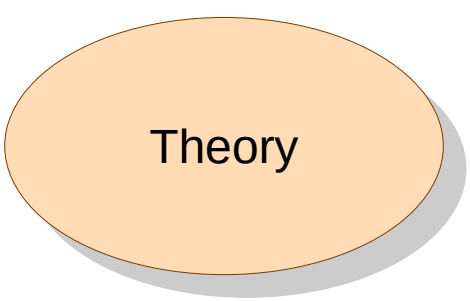
$ myjoin file.out file.in

```
int compareByName(struct s arr[], int ii, int jj) {
    return (strcmp(arr[ii].name, arr[jj].name) > 0);
}
void sortByName(struct s arr[], int N) {
    for (int ii = 0; ii < N - 1; ++ii)
        for (int jj = 0; jj < N - ii - 1; ++jj)
            if (compareByName(arr, jj, jj+1))
                swap(arr, jj, jj+1);
}
```

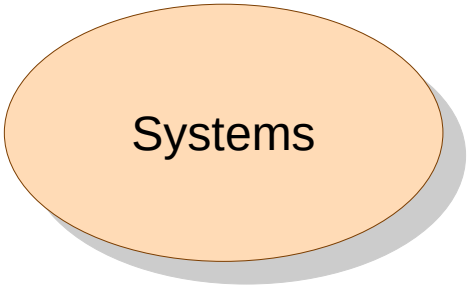
Makefile

	Week	Problems	Tools
✓	0	Solve equations, find weighted sum.	Data types, expressions, assignments
✓	1	Find max, convert marks to grade.	Conditionals, logical expressions
✓	2	Find weighted sum for all students.	Loops
✓	3	Encrypt and decrypt a secret message.	Character arrays
✓	4	Our first game: Tic-tac-toe	2D arrays
✓	5	Making game modular, reuse.	Functions
✓	6	Find Hemachandra/Fibonacci numbers.	Recursion
✓	7	Encrypt and decrypt many messages.	Dynamic memory, pointers
✓	8	Maintain student records.	Aggregate data types
✓	9	Search and sort student records.	Searching and sorting algorithms
✓	A	Reduce memory wastage.	Linked lists
✓	B	Implement token system in banks.	Queues
✓	C	IRCTC-like ticket booking system	File handling
✓	D	Putting it all together	All the above

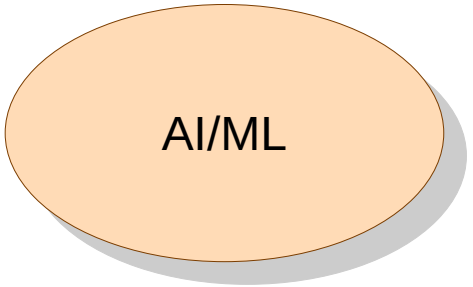
Electives at IITM



Algorithms
Complexity Theory
Cryptography
Graph Theory
Logic
...



Architecture
Cloud Computing
Networks
Parallel Processing
Systems Security
...



Deep Learning
Machine Learning Theory
Natural Language Processing
Pattern Recognition
Reinforcement Learning
...

Future Connect

- Competitive Programming
  - CodeChef, ICPC, Programming Club
- Courses
  - Stream, Honors
- Projects
  - Github Portfolio, Internships, ...
- UGRC / YRF

I want you to

be a Creator.