

Small-Scale Application Development

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Genesis of CS1234

- CTF 2024
- CSE Curriculum Revision 2025
 - Discrete Maths II
 - SmallSAD
 - AI/ML as core?
- SmallSAD
 - Bridging the gap between CS1111 and PDS
 - Programming continuation in the second semester
 - Equipping students with necessary Linux tools

CS1111

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

In this course...

Application	Programming	Tools
Puzzle of grass, goat, lion	Pointers, structures	Editor, visualization
Data maintenance	File I/O	I/O redirection, make
Item grouping	Linked Lists	Debugging
Gene sequencing	Recursion, strings	Memory profiling, ulimit
Closest match	Matrices	Compute profiling, plotting
Keep the recent	Arrays	Version control
Cryptography	Strings, bitwise operators	Library (ncurses)
Unit testing	Command-line	Testing
Web-page creation, analysis	HTML, Strings	wget, shell scripting
Game	Graphics	Library (graphics)
Basics	Python	--

Our goal: *to have fun with automation*

Logistics

- Structure: 1-2-0-3-6-12
- Tutorials and lectures would be intermixed.
 - In-class problem solving sessions
- It would help if you have a laptop.
 - Otherwise, spend time in DCF.
- R&D slots
 - Monday 11, Tuesday 10, Wednesday 9
 - Wednesday 14

Logistics

- **Evaluation**

- Weekly lab assignments ($10 * 5$)
- MidSem (20) + EndSem (20): In-lab
- Special assignments: 10 marks
- Optional: Last two assignments can be combined for a 12-mark project.

- **Additional Points**

- Exams would be closed internet. But you can refer to any of your lab codes (stored locally).
- Assignments are to be submitted on moodle / hackerrank / local server.