CS F111: Computer Programming

(Second Semester 2021-22)

Lect1: Introduction to the course

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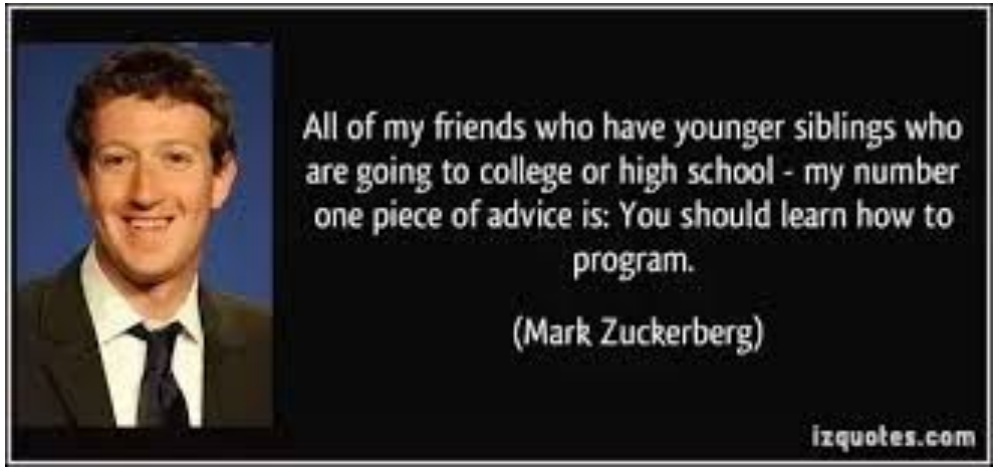
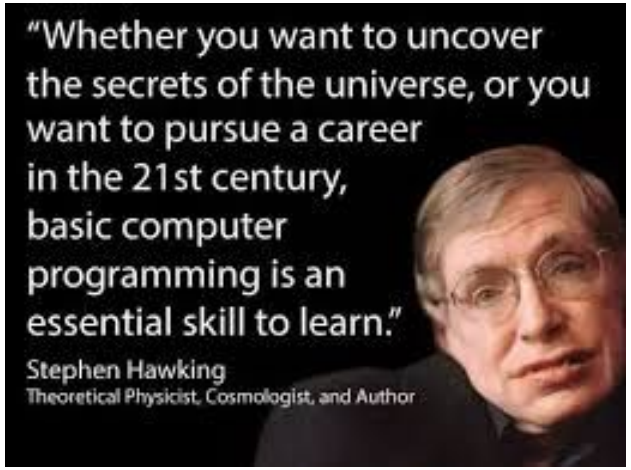
Coding Vs Programming

- What is a Program?
- Coding Vs Programming: Translating vs Building an executable program.
- What is competitive programming?





It teaches you how to think? ... Steve Jobs

Programming Vs Coding

Programming	Coding
Programming is about developing a full-fledged software.	Coding is just taking part in the process of programming.
A set of specific tools needed for different tasks such as testing, Debugging, and others.	A simple text editor is enough for coding and coders to do prefer which had good themes in it.
A person should be expertise in algorithms, problem modeling, and project management	A person should be good at basic knowledge of programming languages and syntax.
Proper planning and time managing are things to take care of here.	No prerequisites needed to get started.
As a result, we get a full-ready to use application.	As a result, we get a simple solution or a small piece of code.

Why is learning programming important?

- Becoming more efficient and productive. (Ex: driving through an unknown terrain, scheduling meetings etc.)
- Improving your problem solving skills.
- You can create anything you want. Ex?
- Learning to program teaches you persistence.
- Did we miss any important reason?

- At the end of the course, you should be able to solve a task by developing an algorithm, writing its' equivalent C program and learning a bit of data structures.

Course Motivation

- **Programming** is the core of everything to do with computers.

- **Application areas :**

Can we think of any place in the inhabited world where we don't have Computers?

- Mobile phones
- Book tickets online
- Buy goods online
- Search Something on internet
- Weather forecast
- Video games
- Intelligent Systems : Washing Machines, Fighter planes
- Device Drivers

Why Learn C?

- C is the *basis for many other languages* (C++, Java, Perl).
- C is very *quick*.
- C is *small* (only 32 keywords).
- C is *common* (lots of C code).
- C is *stable* (the language doesn't change much).
- C is RELATIVELY easy to Learn

auto	double	int	struct
break	**else**	long	**switch**
case	enum	register	typedef
char	**extern**	**return**	union
const	float	short	unsigned
continue	**for**	signed	void
default	goto	**sizeof**	volatile
do	**if**	static	**while**

Course Administration

- Lecture hours
  - Tuesday, Thursday, and Saturday: 11.00am – 11.50am.
  - Please switch off (or put in silent mode) your mobile phones while you are in the class
- Contact Hours
  - Tuesday (4.00pm to 5.00pm) in Google meet
- Course material: Google class (Lect ppt)
  - Lab Quizzes: 23rd April 2022, 11th June 2021

- Mid-Sem: Duration (1.5 Hrs.), Weightage **(30%),** Date: 04/05/2022
- Comprehensive: Duration (2 Hrs.), Weightage **(35%)**, Date: 27/06/2022
- Lab Evaluation (including Lab Quizzes):Weightage (20% (Quiz) + 15% (regular Lab)= **35%**)
- Every week one quiz (non-evaluative) with 30 MCQ questions on google class platform on the topics covered on that week. One hour doubt clearance by on every Saturday (anytime) through meet.

Text Books

Text Book:

T1: J.R. Hanly and E.B. Koffman, *Problem Solving and Program Design in C*. 7th Edition. Pearson Education 2013.

Reference Books:

R1: Programming in ANSI C, E Balaguruswamy, Mc Graw Hill, 8th Edition 2019.

R2: The C Programming Language, Kernighan and Ritchie, 2nd Edition, Pearson, 2015.

R3: Let us C, Yaswanth Kanetkar, BPB Publications, 16th Edition, 2017.

R4: An Introduction to Programming through C++, Abhiram Ranade, McGraw-Hill Education, 2016

Outcome of this Course

- **At the end of the course you should be able to**
  - **solve a problem by developing an algorithm.**
  - **write and execute it's equivalent C program.**
  - **know about the software components responsible for executing your program.**

Course Outline - Overview

- **Fundamentals**
  - Computer Hardware & Software
  - Programming Language
- **Problem Solving Methodology**
  - Flowcharts and Algorithms
- **Overview of C programming**
  - Data-Types, variables
  - Standard Input / Output
- **Programming Constructs**
  - Decision making
  - Looping
- **Complex Data Types**
  - Arrays
  - Pointers
  - Strings
  - Structures
- **Modular Programming**
- **Bit-Level Manipulations**
- **Linked Lists**
- **File Handling**