Overview of The Course

Fundamentals of C Programming (24CA1102)

Mr. Mohd Adil

Assistant Professor

History of computing

Before starting with the C programming, it might be interesting to look into the history of computing.

History of computing

Long ago, people used to remember the codes in binary format.

In today's world it might sound like a joke but at that time there was no concept of programming language.
They had to write down the codes in machine understandable language — that is 0's and 1's.
You can imagine how hard it is to remember and write those codes.

History of computing

Each of the letters represents 8 bits in binary.

History of computing

Add two numbers

if we try to write the
commands for adding numbers
in binary.

As human we can't do that we cannot remember binary number

Because it is very difficult to write.

History of computing

ASSEMBLY LANGUAGE

The solution is the language which you can understand and remember well, right.
Therefore, Assembly language came into picture.
For addition of two numbers,
you are not required to enter those binary bits.
Instead, you will write:

```
ADD A, B
```

If A and B are the variables and if you want to add the contents of the variables A and B.
OK, everything is fine up till now.
But maybe one question is that if assembly language is doing well... Then why do we require another language like c

History of C language

- Developer of **BCPL**
- **Basic Combined Programming Language**
- 1966

Martin Richards

History of C language

- Developer of B language
- 1969
- Also developer of UNIX operating system
- He also developed first master level chess called Belle in 1980.

Ken Thompson

History of C language

- Developer of **C language**.
- In **1972**
- At AT & T's Bell LABs, USA
- Co-developer of UNIX operating system.

Dennis Ritchie

Why C?

- Portability

Portability: ability to run your code anywhere you want.

Assembly: ~~Portable~~

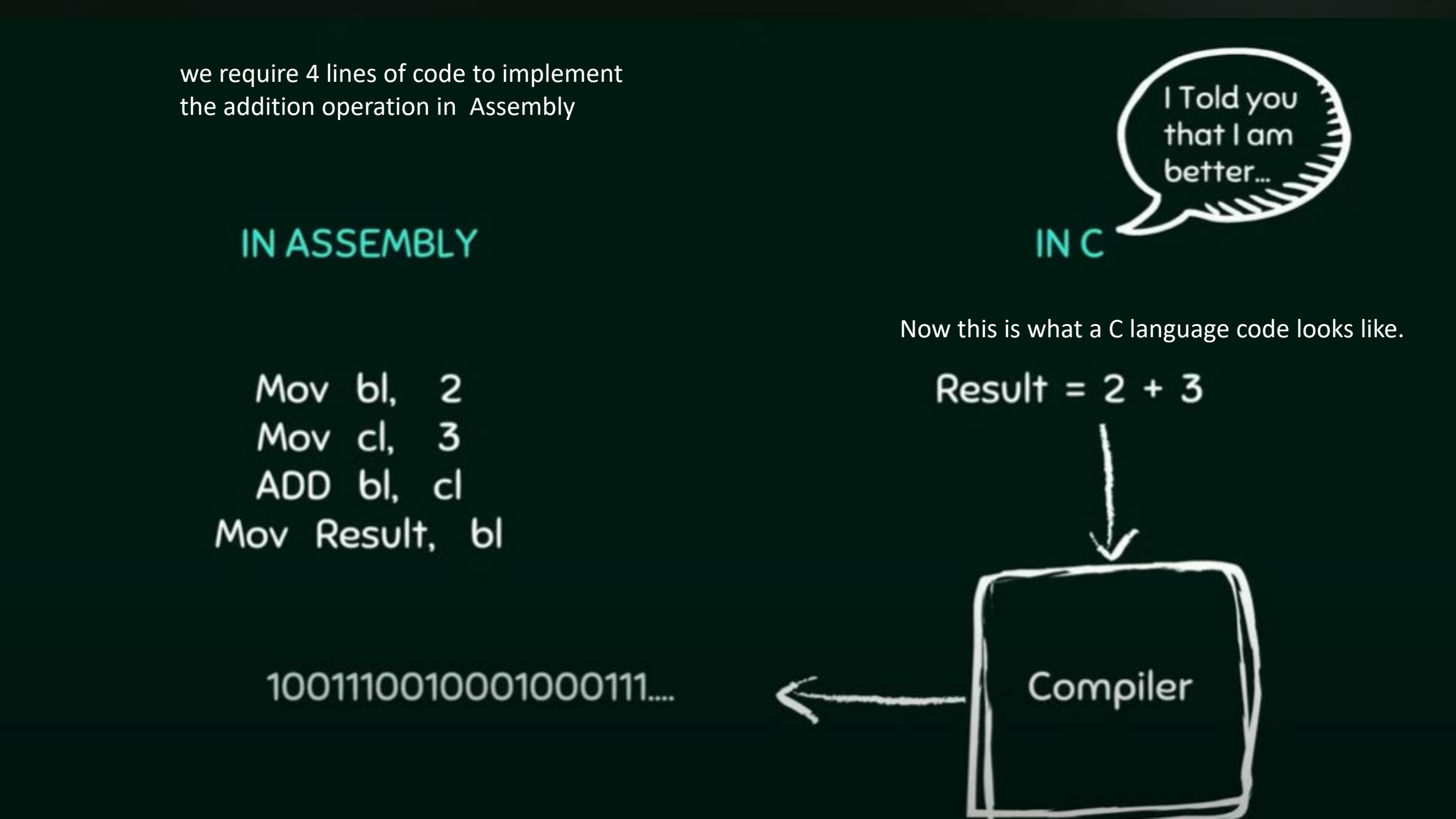
C: Portable

Why C?

In 1969, when the Unix operating system was first developed, it was known that the language on which this operating system was developed is Assembly Language.
But the experts encountered some problems which need to be resolved.
One of the major problems is portability Assembly is not portable

- Portability
- Less lines of code

we require 4 lines of code to implement the addition operation in Assembly



Now this is what a C language code looks like.

Introduction to C Language

C was originally developed in the 1970s by Dennis Ritchie at Bell Labs. It is a high-level, general-purpose programming language that allows for both system and applications programming. C contains features that bridge machine language and high-level languages, making it useful for both system and applications programming

C became very popular because the **UNIX operating system**, its **compiler**, and most UNIX programs were written in C.

- It is **easy to learn**
- It is a **structured language**, which means programs are organized in a clear way
- It creates **fast and efficient programs**
- It can work with **low-level parts of the computer**, like memory and hardware
- It can be **used on many different types of computers**

Facts about C

- C was invented to write an operating system called UNIX.
- C is a successor of B language which was introduced around the early 1970s.
- The language was formalized in 1988 by the American National Standard Institute(ANSI).
- The UNIX OS was totally written in C
- Most of the state-of-the-art software have been implemented using C.
- Today's most popular Linux OS and RDBMS MySQL have been written in C.

Why Learn and Use C?

- C is one of the most important programming languages in computer science. It was originally created to help build **system software**, especially the parts of a computer system that run behind the scenes—like the operating system itself.
- The reason C became popular for this kind of work is because **programs written in C run very fast**, almost as fast as those written in **assembly language**, which is much harder to learn and write. C gives you the power of low-level programming but with much easier and clearer syntax.

Where is C Used?

- Operating Systems
- Language Compilers
- Assemblers
- Text Editors
- Network Drivers

And many more..

Features of C language

- Procedural Language
- Fast and Efficient
- Modularity
- Statically Type
- General-Purpose Language
- Set of built-in Operator
- Middle-Level Language
- Portability