Chapter 1

Overview of Computer Software & Programming Language

Er. Shiva K. Shrestha (HoD)

Department of Computer Engineering,

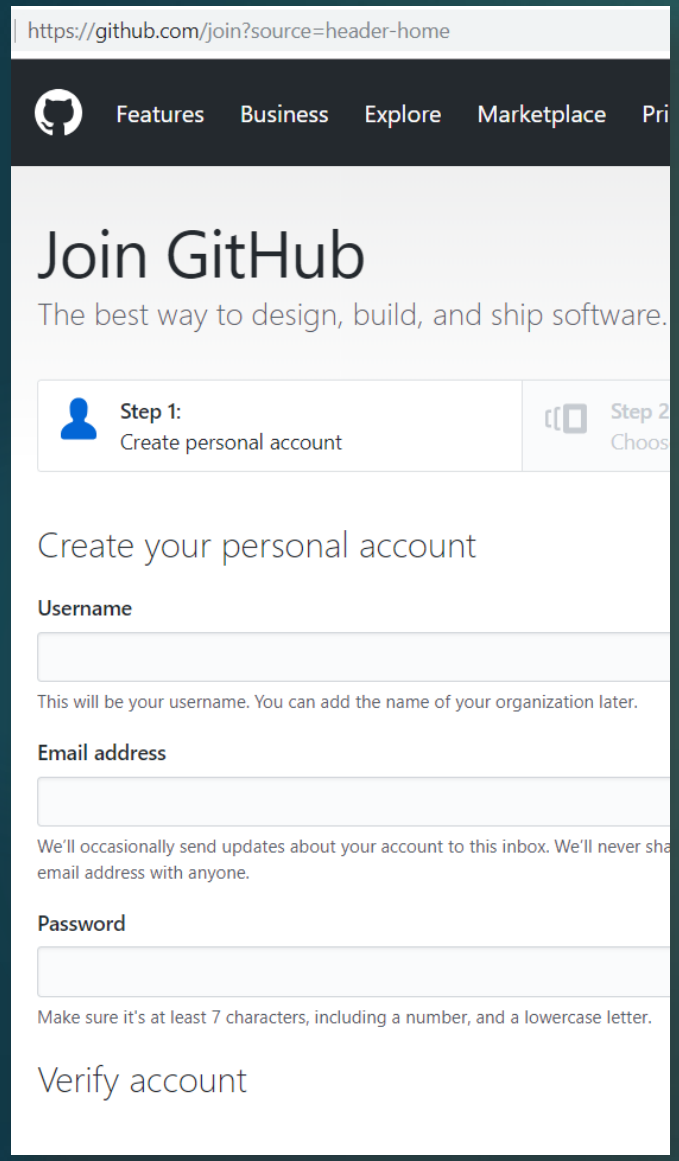
Khwopa College of Engineering

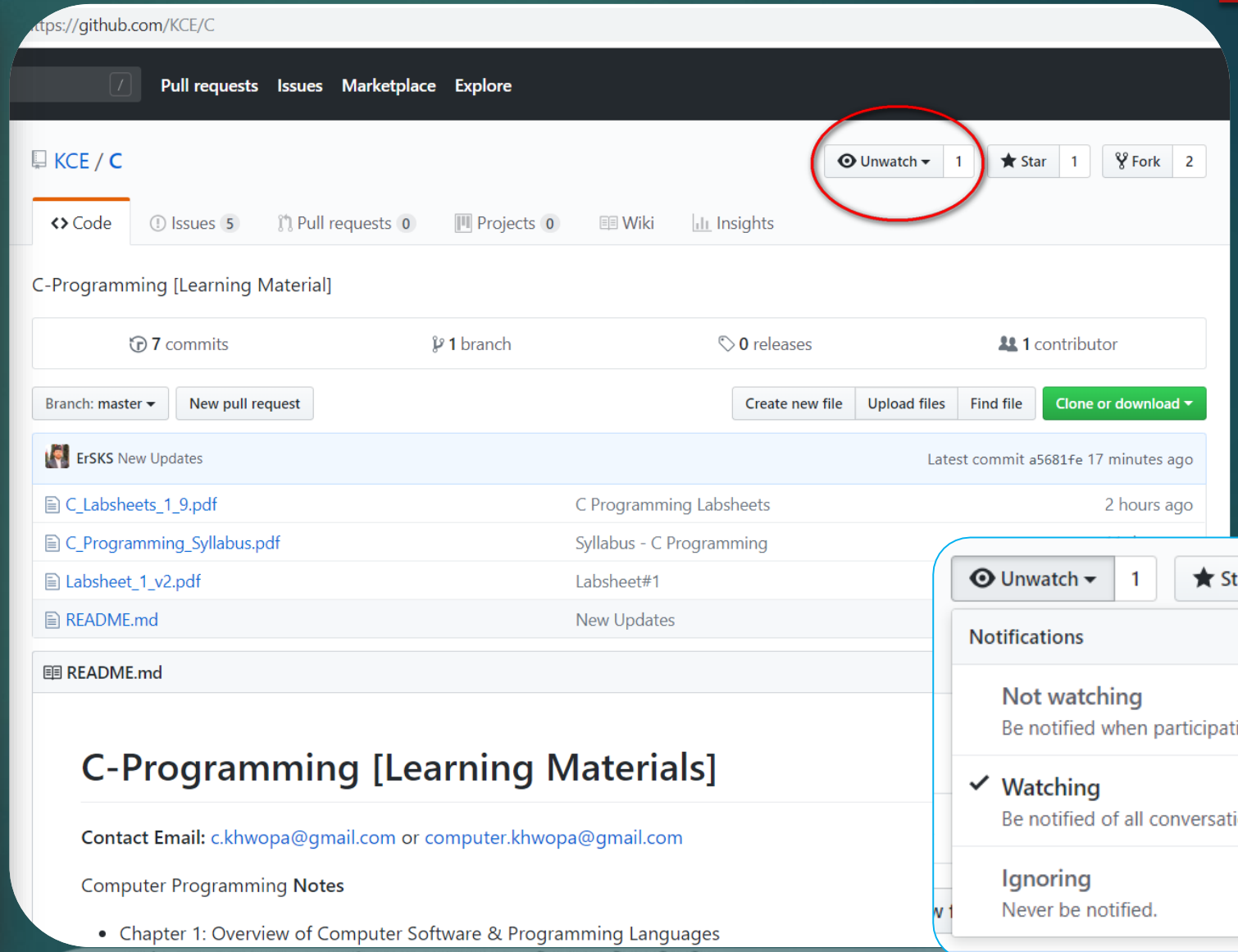
C Evaluation

- Internal Marks (20)
  - First Assessment (5)
  - Assignment (4)
  - Class Test (1)
  - Attendance (2)
  - Final Assessment (8)
- Practical Marks (30)
  - Lab Test (5)
  - Lab Attendance (4)
  - Lab Report (9)
  - Viva (2)
  - Final Lab Exam (10)
- Mini Project (20)
  - Proposal (8)
    - Hard-copy Proposal (2)
    - Presentation (2)
    - Team-work (2)
    - Viva (2)
  - Final Defense (12)
    - Hard-copy Proposal (3)
    - Presentation (3)
    - Team-work (3)
    - Viva (3)

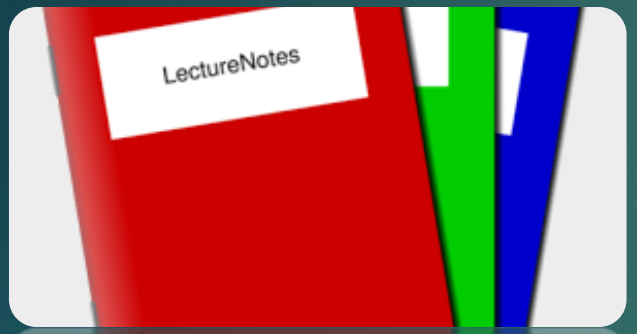
GitHub.com/KCE/C – Signup & Watch

Er. Shiva K. Shrestha (HoD, Computer De
10/3/2018





C-Programming [Learning Materials]



Syllabus+

C Syllabus

Question Banks

Compilers (Online, C, FORTRAN)

Mini-Project Help

Proposal Format

Project Team Detail

Report Format

Results

First Assessment Result

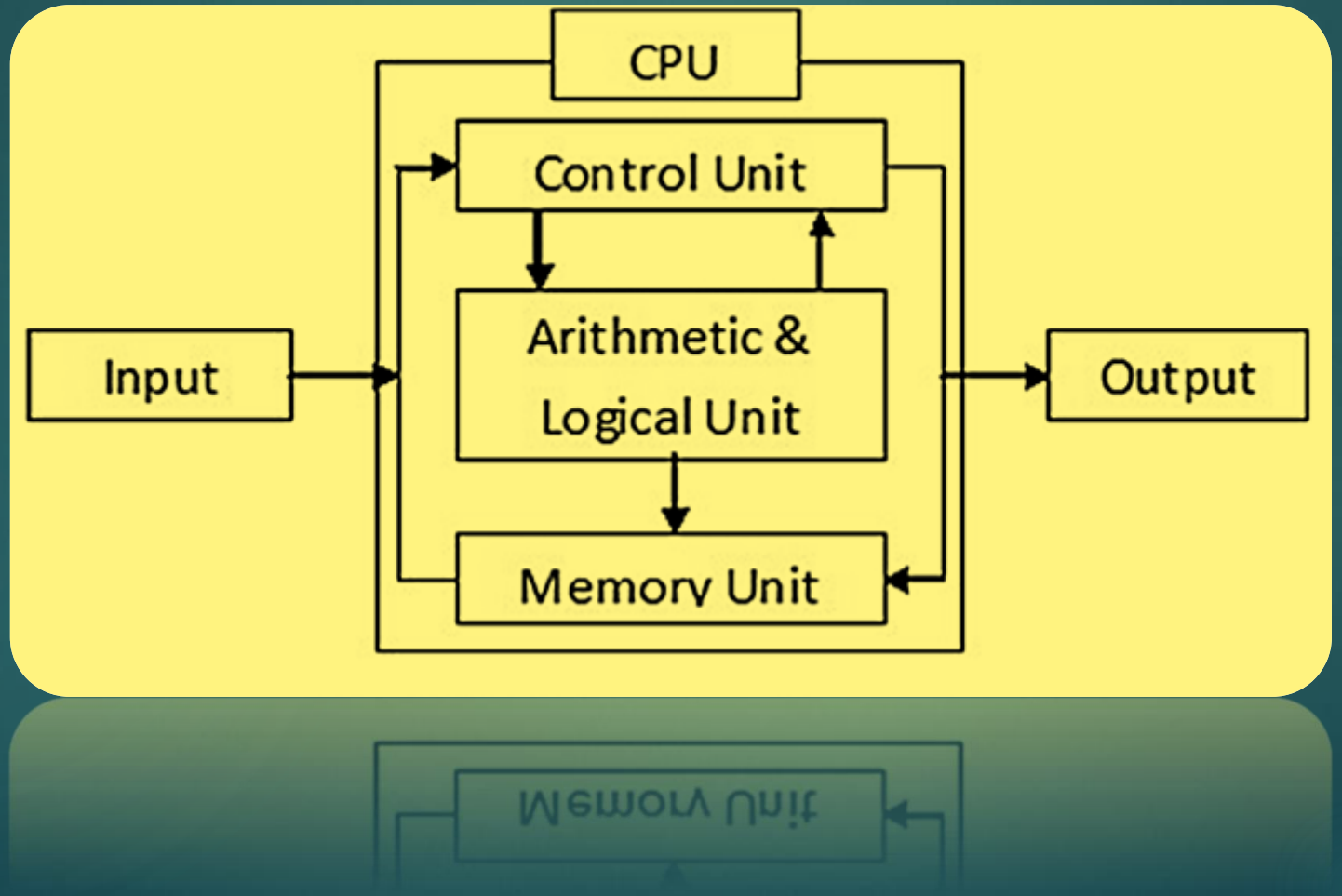
Final Result

Internal Marks

Practical Marks

Mini-Project Marks

Computer [Intro.]



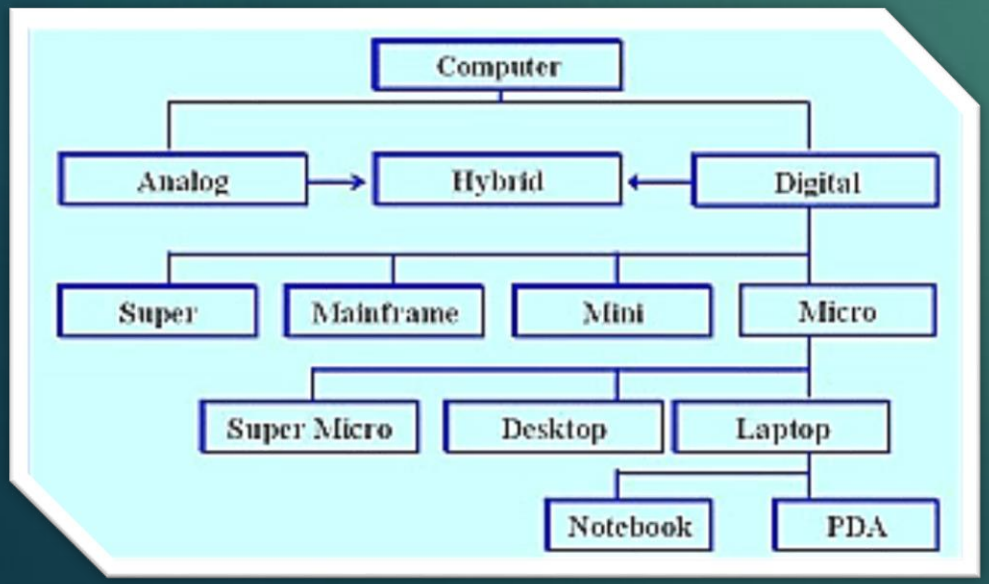
Classification of Computer

On the basis of Working Mode

- Analog Computer
- Digital Computer
- Hybrid Computer

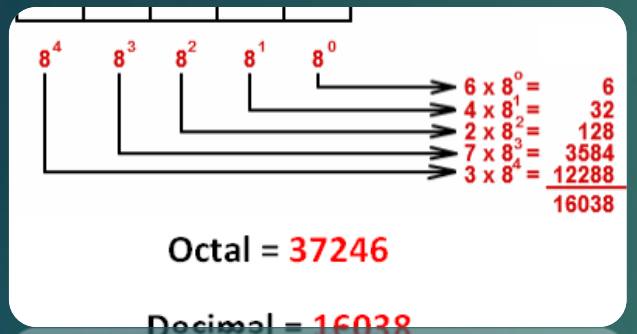
On the basis of Size

- Micro Computer
- Mini Computer
- Mainframe Computer
- Super Computer



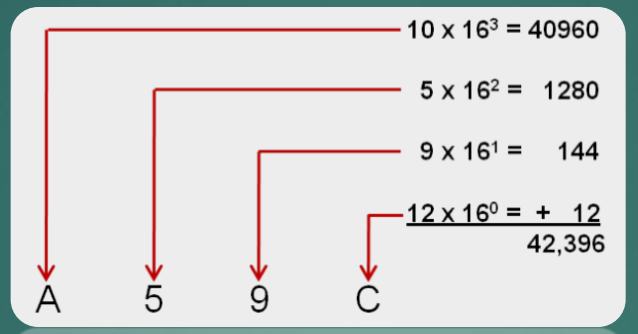
Number System

Er. Shiva K. Shrestha (HoD, Computer Department)
10/3/2018



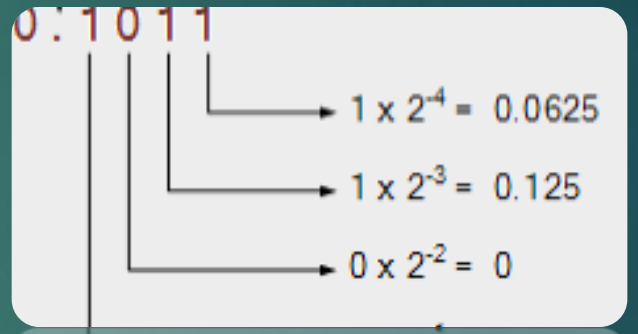
Octal

$2348 = ?10$



Hexadecimal

$B2516 = ?10$



Binary

$1101_2 = ?_{10}$

$127_{10} = ?_2$

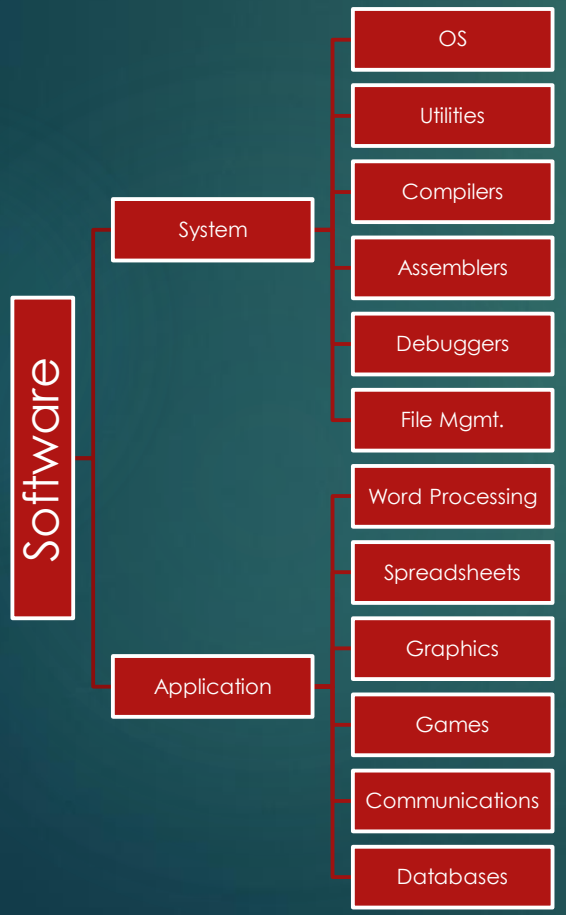
$0.625_{10} = ?_2$

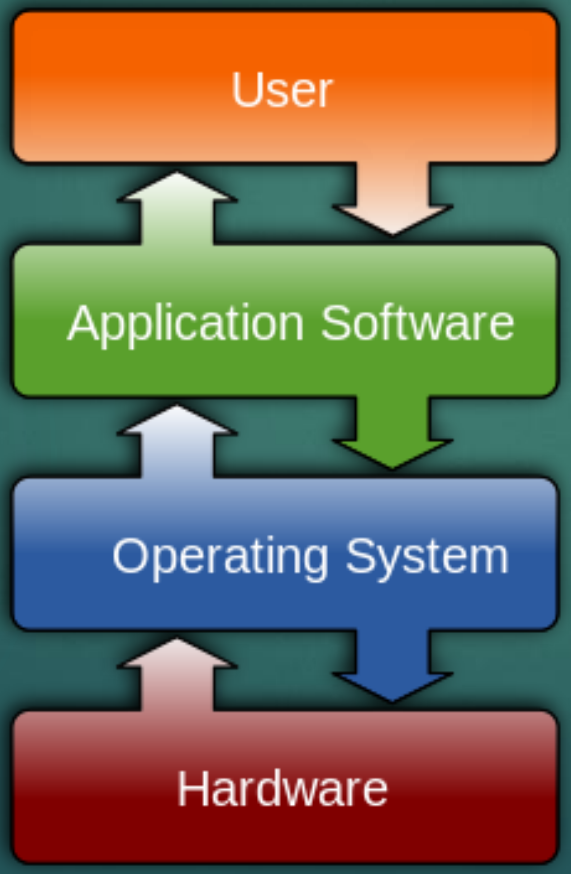
$0.1_{10} = ?_2$

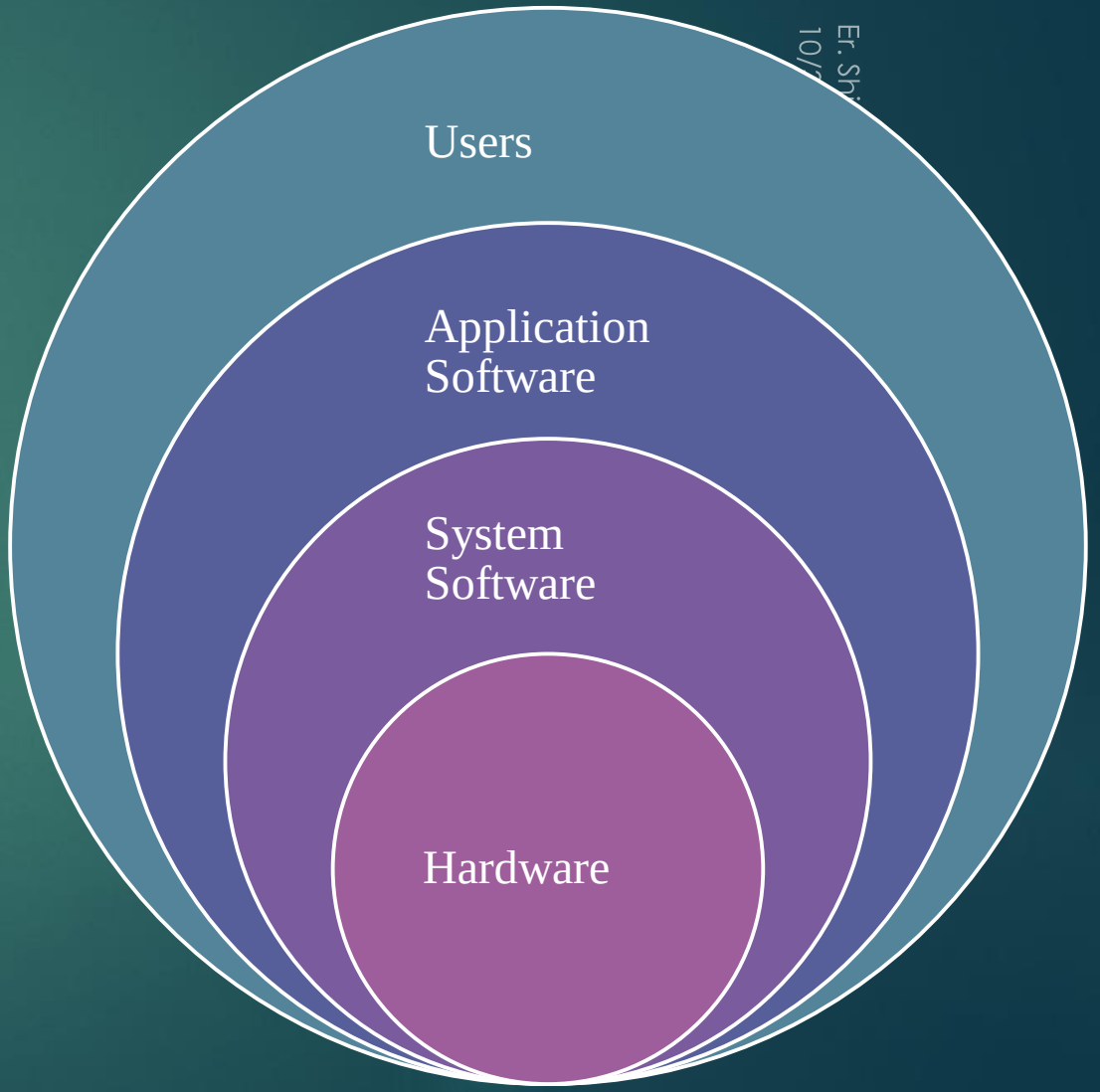
$7.235_{10} = ?_2$

Relationship of Software, Hardware & Users

System S/w vs. Application S/w







History & Development of Computers

Er. Shiva K. Shrestha (HoD, Computer Department)
10/3/2018

Great Moments in PC HISTORY

1939 Hewlett-Packard Company founded in a Palo Alto, Calif. garage

1963 Mouse invented at Stanford Research Institute by Doug Engelbart and Bill English

1973 Ethernet invented at Xerox PARC, connecting computers

1975 Altair "personal computer" kit lets anyone build a simple computer for about $400

1981 The IBM 5150 PC announced, sparking PC adoption

a. Weight: 44 lbs.
b. 40 KB of built-in ROM and 16 KB of RAM
c. Code name: "Acorn"
d. Inflation-adjusted cost: $4,000

1981 HP introduces the HP 12c Financial Calculator, an iconic tool still revered and sold today

1983 TIME Magazine names the computer "Machine of the Year"

1983 HP brings touch to the PC with the HP-150 Touchscreen

1985 Microsoft releases Windows 1

1991 World Wide Web inventor Tim Berners-Lee releases the first web browser to the world

1984 Apple launches the Macintosh computer with graphical user interface

"Copy, Cut and Paste" functions are popularized

1993 & 1994 The first public web browsers appear

1995 Microsoft introduces the Internet Explorer web browser

1996 Palm (acquired by HP in 2010) releases its Palm Pilot Connected Organizer, an innovative mobile device that syncs to a PC

1998 Google is founded

1999 50% of U.S. households have a PC; web users worldwide top 200 million

2006 First mobile broadband notebook computers appear

2007 Apple introduces the iPhone

2008 Number of computers used worldwide exceeds 1 billion

2011 The IBM PC turns 30 on Aug. 12

Happy 30th Birthday

2011 HP leads in global PC sales, shipping 2 PCs a second

1 sec =

Computer History Museum

MOORE'S LAW TIMELINE

Moore's Law – the observation that computing dramatically decreases in cost at a regular pace – is short-hand for rapid technological change. Over the past 50 years, it has ushered in the dawn of the personalization of technology and enabled new experiences through the integration of technology into almost all aspects of our lives.

WHAT CAN BE DONE, CAN BE OUTDONE

Intel continues to deliver on the promise of Moore's Law with the introduction of powerful multi-core technologies, transistor architecture, advances in materials science and new innovations.

2015: Intel introduces the 5th generation Intel® Core processor (**1.3 billion transistors**).

2012: Intel introduces the Intel® Core i5 processor (**1 billion transistors**).

2012 First implementation of CMOS tri-gate transistors in high-volume manufacturing

2008 First implementation of high-k/metal gate in high-volume manufacturing

2004 First implementation of strained silicon in high-volume manufacturing

2004: Intel introduces Intel® Pentium® 4 processor with HT technology (**125 million transistors**).

2002 300mm wafer production begins

2001: Intel introduces Intel® Pentium® 4 processor (**42 million transistors**).

1995 Moving from aluminium to copper

1995: Intel introduces Intel® Pentium® Pro processor (**5.5 million transistors**).

1993: Intel introduces Intel® Pentium® processor (**3.1 million transistors**).

1991 200mm wafer production begins

1989: Intel introduces 486™ processor (**1.2 million transistors**).

1985 Moving from NMOS to CMOS

1985: Intel introduces 386™ processor (**275,000 transistors**).

1982: Intel introduces 80286 processor (**134,000 transistors**).

1979: Intel introduces 8088 processor (**29,000 transistors**). In 1981, IBM introduces the PC using the 8088 and ignites the trend of personal computing.

1977: Apple® II personal computer introduced.

1975: Gordon Moore updated his prediction of the rate of growth of IC components from doubling every year to doubling every two years.

1971: Intel's Ted Hoff invents the first microprocessor (called the 4004, **2300 transistors**).

1970S Moving from Bipolar to MOS

1968: Gordon Moore and Robert Noyce leave Fairchild® to form Intel Corp.

1965: Gordon Moore authors paper predicting the rate of growth of IC components in Electronics magazine. His observation was later termed '**Moore's Law**'.

1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015

For more information, please visit intel.com.

How small can a transistor be?

The evolution of microprocessor manufacturing processes

10,000.00 nm — Intel 4004 — Intel 8088
3,000.00 nm — Intel 80386 — AMD K5
1,500.00 nm
1,000.00 nm
800.00 nm
600.00 nm
350.00 nm — IBM PowerPC 601
250.00 nm — AMD K6-2
180.00 nm
130.00 nm
90.00 nm
65.00 nm — Intel Pentium 4
45.00 nm
32.00 nm — AMD Athlon XP
22.00 nm
16.00 nm
11.00 nm
6.00 nm — Intel XEON 5400
4.00 nm — Intel Core i7
Size of one phosphorous atom
0.10 nm

"You can see that we're approaching the size of atoms..."
- Gordon Moore

Log scale

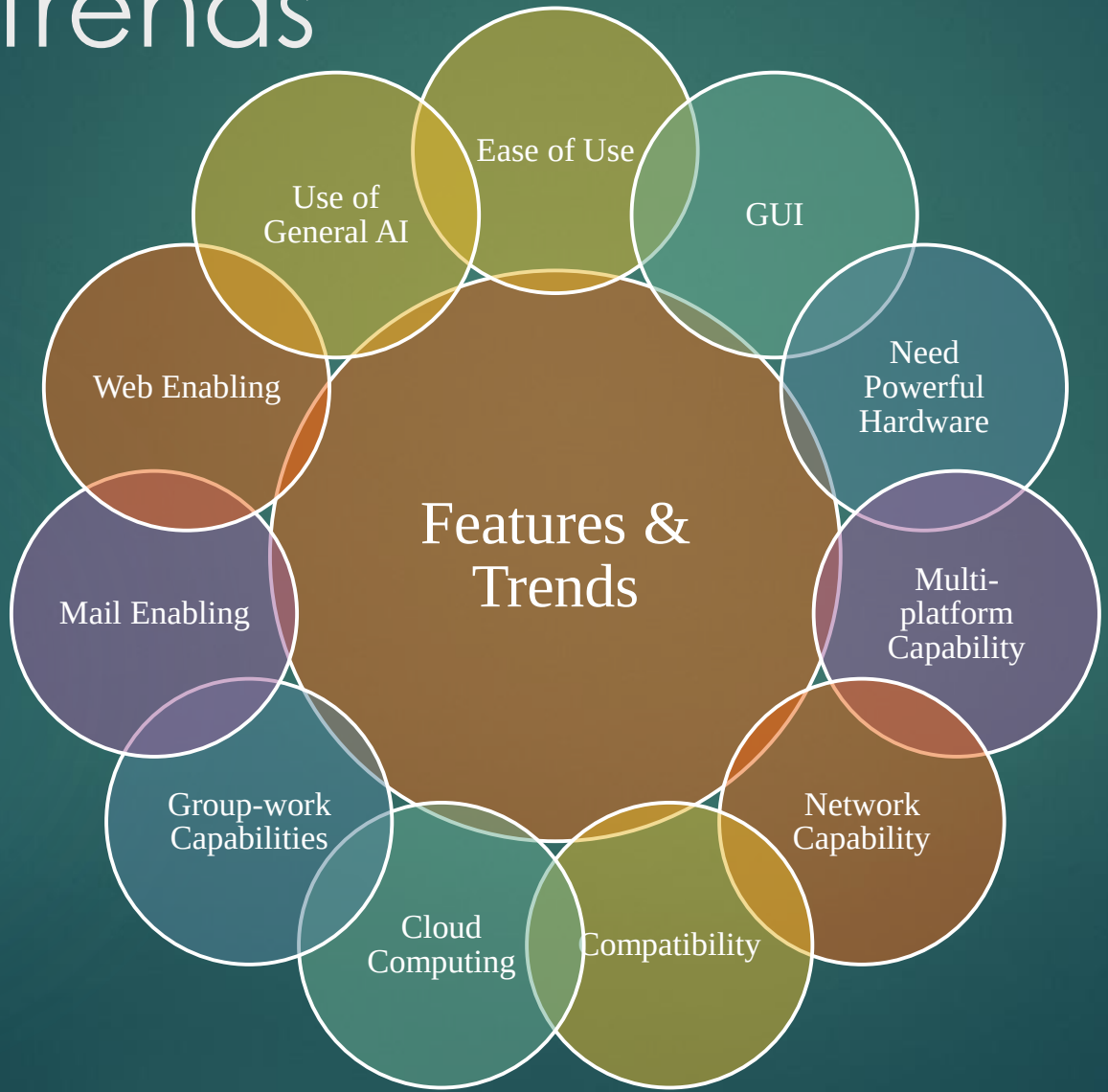
Today

1971 1982 1989 1995 1999 2002 2008 2011 2015 2022

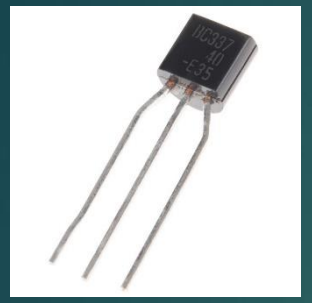
Data source: WikiPedia
Graphics from Intel, ShutterStock, and WikiPedia

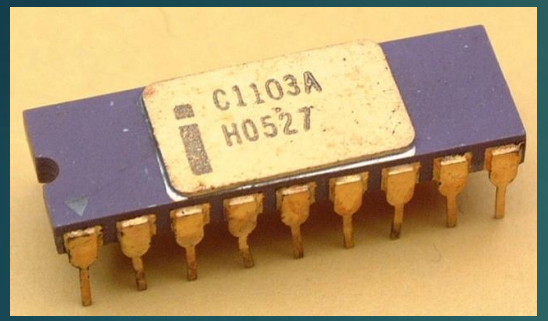
www.pingdom.com

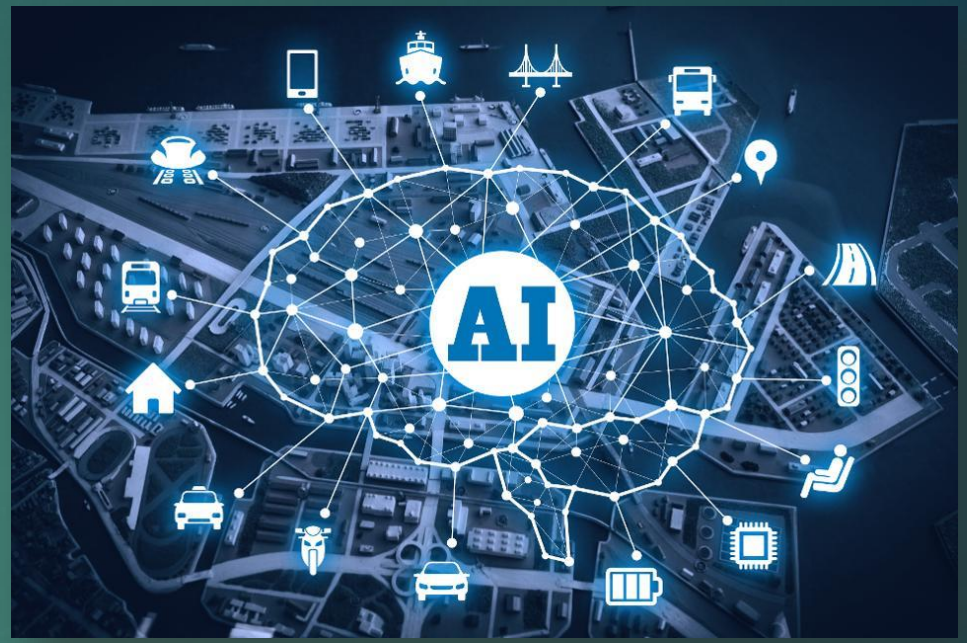
General Software Features & Recent Trends



Generation of Computer





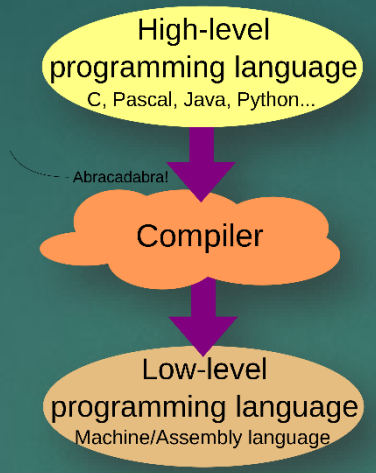


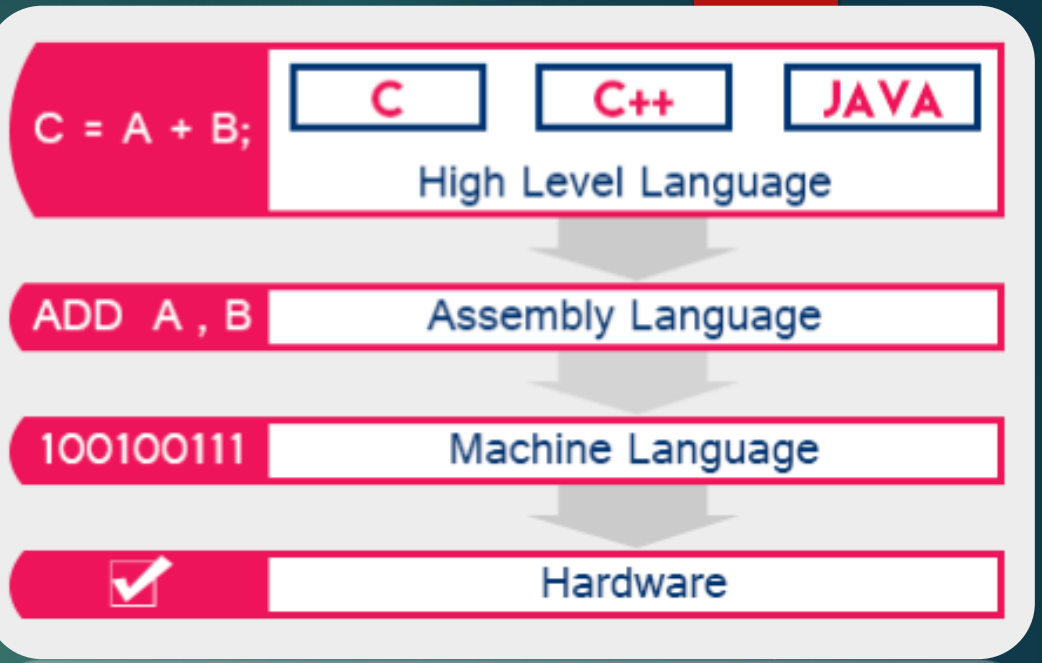
1st Gen	2nd Gen	3rd Gen	4th Gen	5th Gen
• Vaccum Tubes • 1945-55	• Transistors • 1955-65	• IC • 1965-1980	• µP • 1980	• AI • Present & Beyond

Programming Languages

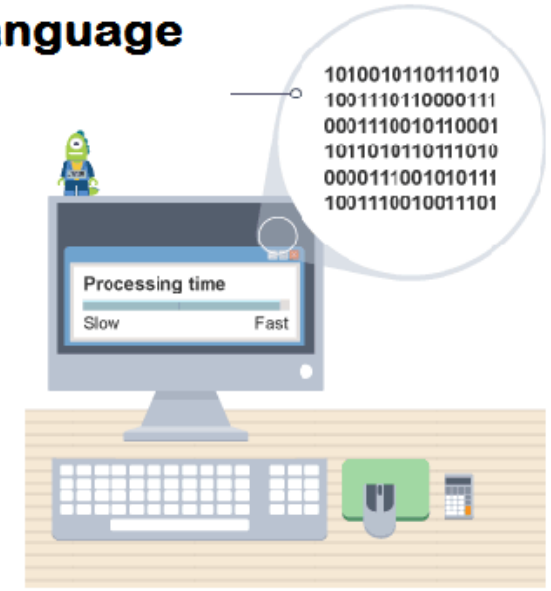
Programming Language

- Low-Level
  - Machine Languages
  - Assembly Languages
- High-Level

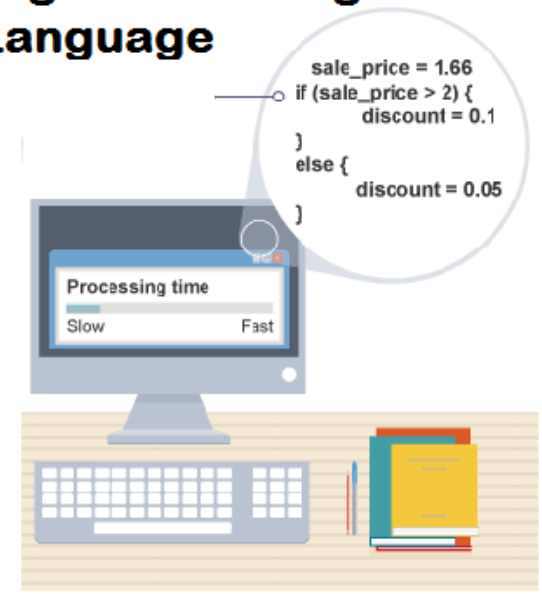


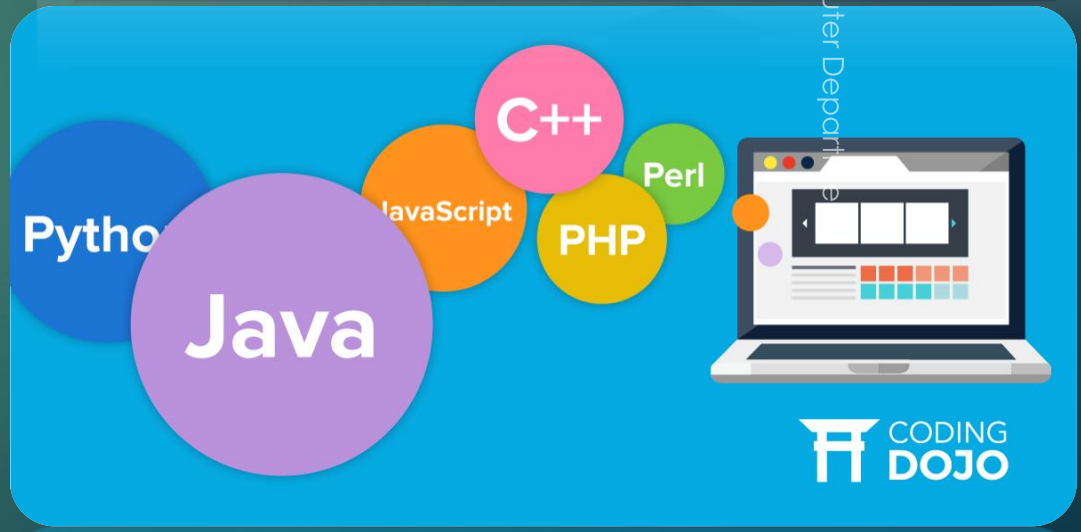


Low Level Programming Language



High Level Programming Language

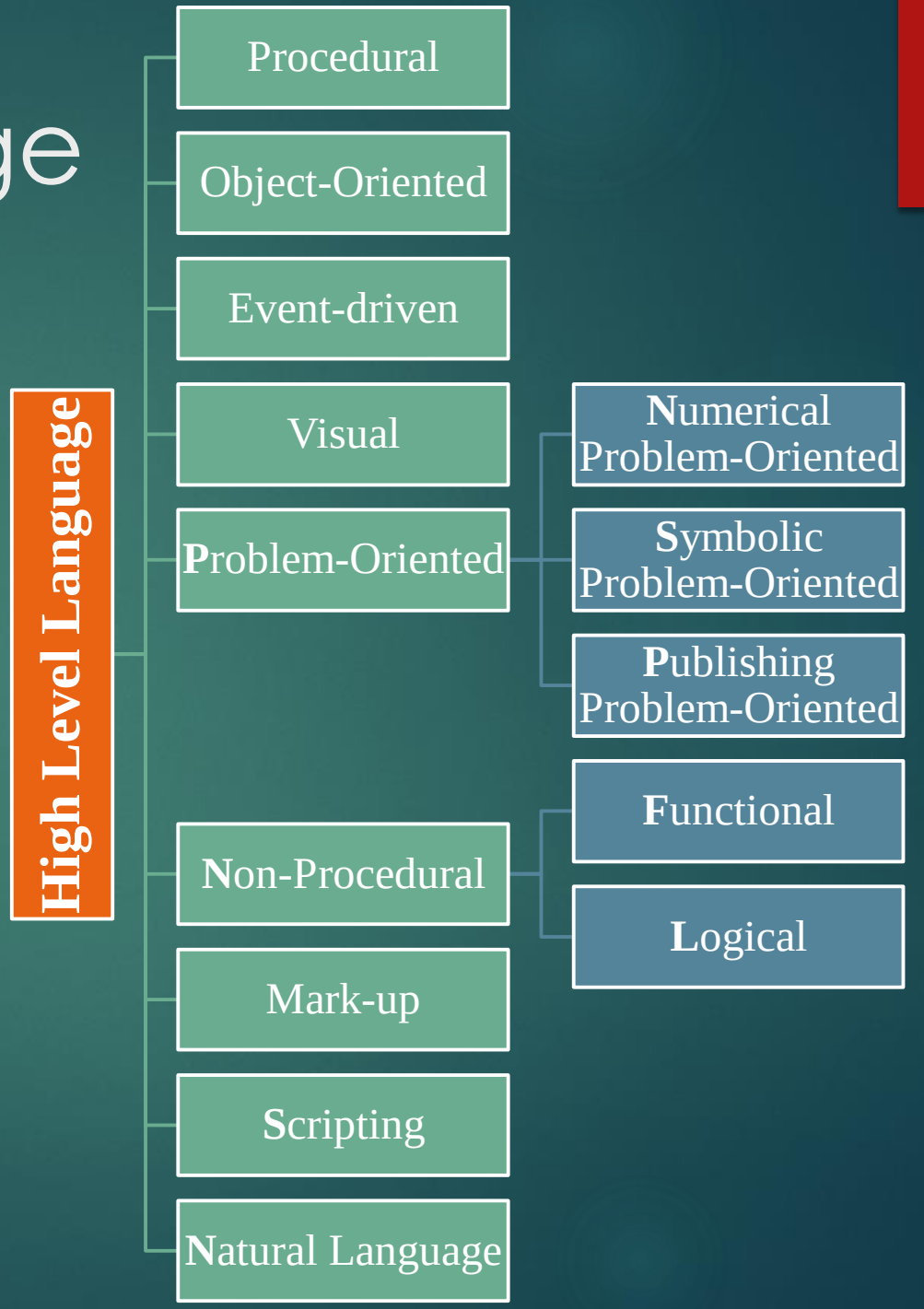




Computer Depart

High Level Language Categorization

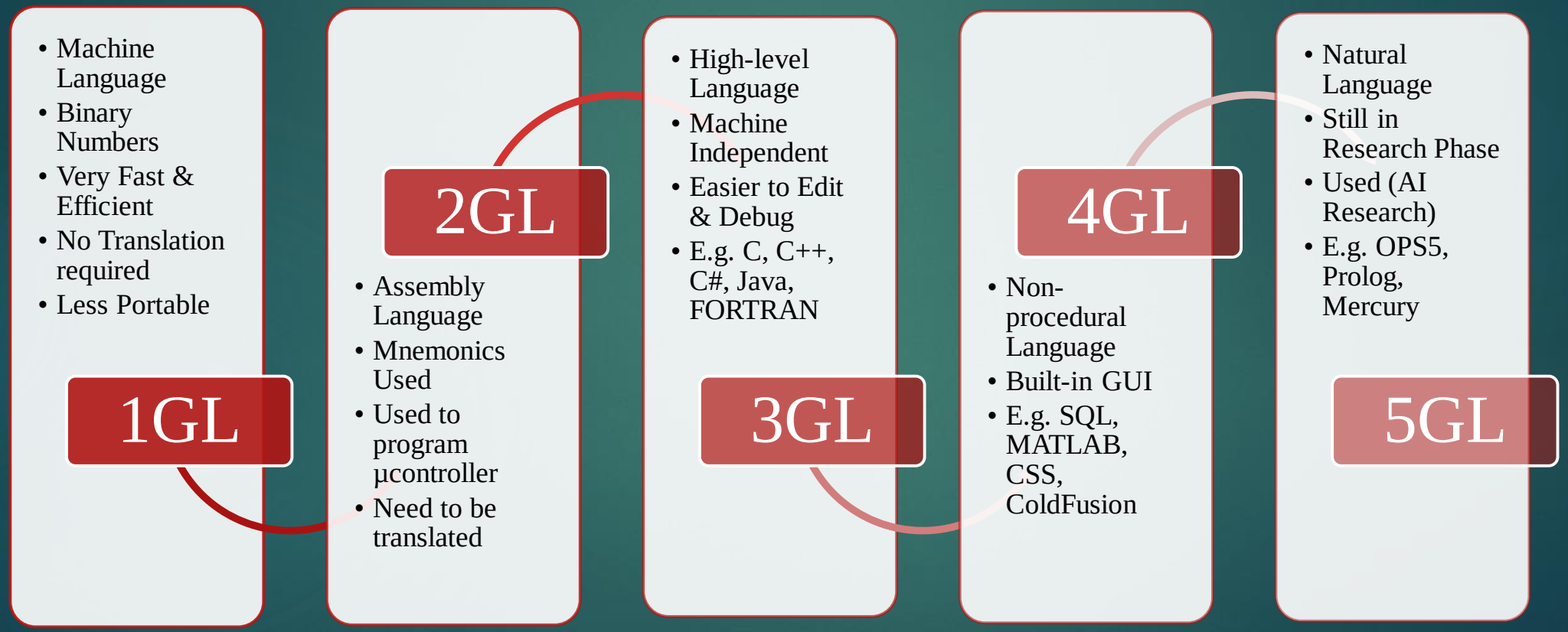
- Procedural
- Object-Oriented
- Event-driven
- Visual
- Problem-Oriented
- Non-Procedural
- Mark-up
- Scripting
- Natural Language



High Level vs. Low Level

High Level Language	Low Level Language
These are Interpreted	Direct memory management
They have open classes and message-style methods which are known as Dynamic constructs	Hardware has extremely little abstraction which is actually close to having none.
Poor performance	Much fast than high level
Codes are Concise	Statements correspond directly to clock cycles
Flexible syntax and easy to read	Superb performance but hard to write
Is object oriented and functional	Few support and hard to learn
Large community	

Generation of Programming Languages



Generation
Computer & Programming Language

Er. Shiva K. Shrestha (HoD, Computer Department)
10/3/2018

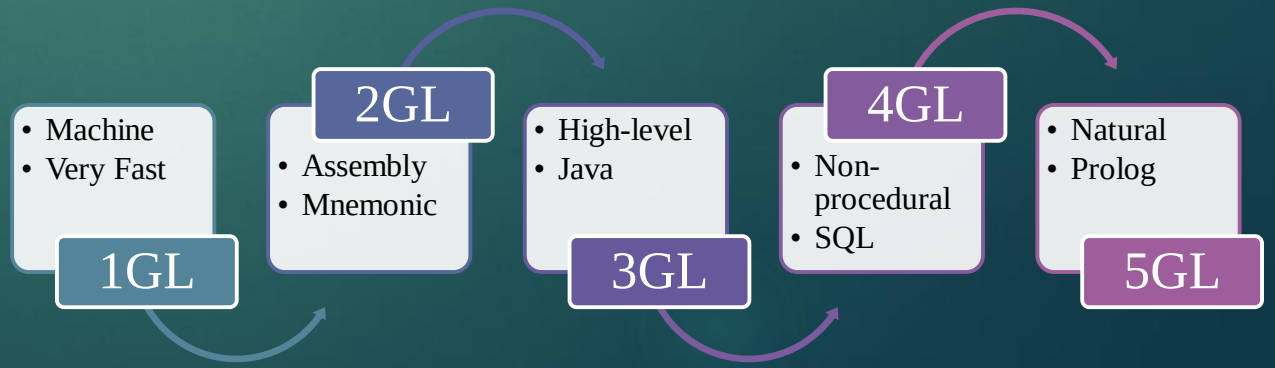
Generation of Computer

1st Gen	2nd Gen	3rd Gen	4th Gen	5th Gen
• Vaccum Tubes • 1945-55	• Transistors • 1955-65	• IC • 1965-1980	• µP • 1980	• AI • Present & Beyond

- History of Computer Development – Generation of Computer
- Characterized by major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful, more efficient, and reliable devices.

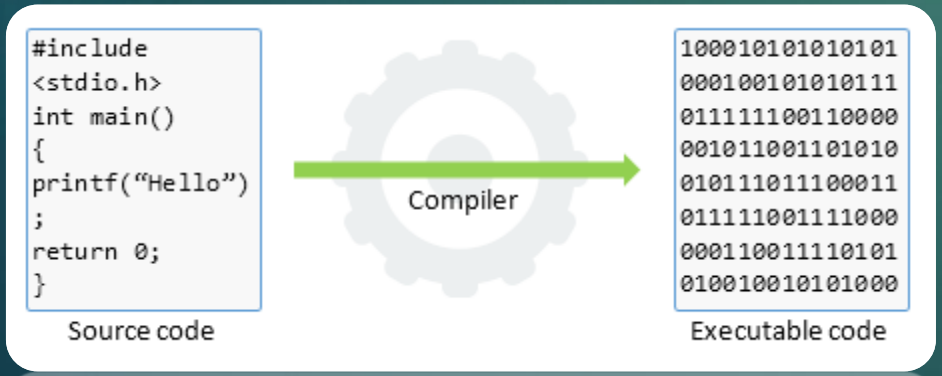
Generation of Programming Languages

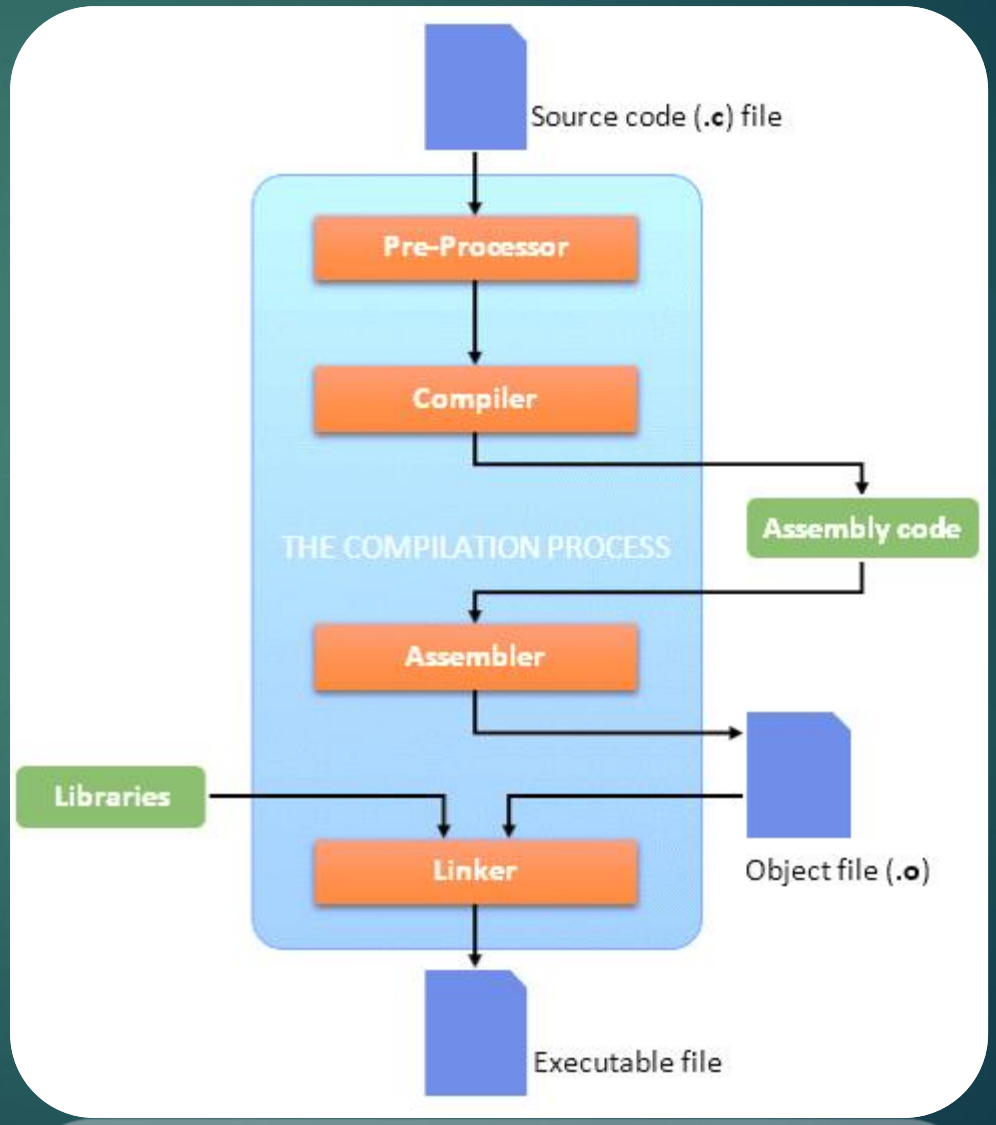
- Programming language is a set of written symbols that instructs the computer hardware to perform specific tasks
- Programming languages are classified into five generations depending upon the power and flexibility of programming styles.



Compilation Process

1. Pre-processing
2. Compilation
3. Assembling &
4. Linking





Er. Shiva K. Shrestha (HoD, Computer Department)
10/3/2018

Interpreter vs. Compiler

Interpreter	Compiler
Translates program - one statement at a time.	Scans the entire program and translates it as a whole into machine code.
It takes less amount of time to analyze the source code but the overall execution time is slower.	It takes large amount of time to analyze the source code but the overall execution time is comparatively faster.
No intermediate object code is generated, hence are memory efficient.	Generates intermediate object code which further requires linking, hence requires more memory.
Continues translating the program until the first error is met, in which case it stops. Hence debugging is easy.	It generates the error message only after scanning the whole program. Hence debugging is comparatively hard.
Programming language like Python, Ruby use interpreters.	Programming language like C, C++ use compilers.

Q/A?

Thank You!

Er. Shiva K. Shrestha

computer.khwopa@gmail.com