Chapter 0 - Introduction

What is computer science? There are many definitions of it but we will look into two.

The Linux Information Project defines Computer Science as the study of the storage, transformation and transfer of information. The field encompasses both the theoretical study of algorithms (including their design, efficiency and application) and the practical problems involved in implementing them in terms of computer software and hardware.

The Association for Computing Machinery (ACM) defines it as the study of computers and algorithmic processes, including their principles, their hardware and software designs, their applications, and their impact on society.

> ACM is the world's largest educational and scientific computing society. And it awards annually the ACM A.M. Turing Award for "contributions of lasting and major technical importance to the computer field". Awarded in honor of Alan Turing, considered to be the father of modern computer science and often credited as the founder of theoretical computer science and artificial intelligence, it is generally considered as the "Nobel Prize of Computing."

> Some of the recipients of this prestigious award include Edsger W. Dijkstra (1972 - Principal Contributor to the development of ALGOL), Charles Bachanan (1973 - Database Technology), Donald Knuth (1974 - Analysis of Algorithms and Design of Programming Languages), Ken Thompson and Dennis Ritchie (1983 - Implementation of the Unix Operating System), Ron Rivest, Adi Shamir, and Leonard Adleman (2002 - Public-Key Cryptography - RSA), Time Berners-Lee (2016 - World Wide Web), and Frances E. Allen (2006 - Theory and Practice of Optimizing Compiler Techniques, and the first woman to receive the award).

Both definitions presented here, including our very own CHED's definition of what a Bachelor of Science in Computer Science degree is (study of computing concepts and theories, algorithmic foundations and new developments in computing including software engineering), have laid your journey as a Computer Science major.

From the Foundations of Computer Science, and Discrete Mathematics, to Data Structures, Design and Analysis of Algorithms, Automata Theory, to Software Engineering, to hardware related courses on Logic and Gate Theory, Computer Architecture, and Data Communication, to Artificial Intelligence and Machine Learning, to Ethics in Computer Science, and to Research in Computer Science.

All these, to prepare you in committing to contribute to community development and nation-building through computing.

Check out this video (https://youtu.be/SzJ46YA_RaA) from Open Culture (www.openculture.com) for a comprehensive map of the fields of Computer Science.

Before heading on to the next section, watch these series of videos from Crash Course Computer Science.

- Crash Course Computer Science Preview: https://youtu.be/tpIctyqH29Q?list=PL8dPuuaLjXtNlUrzy

H5r6jN9ulIgZBpdo

- Early Computing: https://youtu.be/O5nskjZ_GoI?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Electronic Computing: https://youtu.be/LN0ucKNX0hc?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Boolean Logic and Gates: https://youtu.be/gI-qXk7XojA?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Representing Numbers and Letters in Binary: https://youtu.be/1GSjbWt0c9M?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- How Computers Calculate: https://youtu.be/1I5ZMmrOfnA?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Registers and RAM:https://youtu.be/fpnE6UAfbtU?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- The Central Processing Unit: https://youtu.be/FZGugFqdr60?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Instructions and Programs: https://youtu.be/zltgXvg6r3k?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo
- Advance CPU Designs: https://youtu.be/rtAlC5J1U40?list=PL8dPuuaLjXtNlUrzyH5r6jN9ulIgZBpdo

These videos are also included in the the course pack.