

The Computing Industry



WEEK 1

Introduction

This will discuss the branch of science that deals with the theory of computation or design of computers. Also, students will be introduced with the computing industry in the Philippines as well as the sectors that composed it. Further, students will be oriented with career opportunities for them when they graduate.

Objective

This aims to discuss the concept of computing and describe the computing industry in the Philippines.

Introduction

Any goal-oriented activity that requires, benefits from, or creates computer machinery is referred to as **computing**.

It deals with the use of **technology** and how it **affects human** in a positive way.

In business, computing industry is defined as a sector of any given economy that is concerned with **technology research, development, sales and production**.

Computer Science

- A branch of science that deals with the theory of computation or design of computers.
- It is important to remember that in **modern science**, a **theory** is a documented, testable and observable explanation of what is being theorized. In some branches of science, such as physics, a theory is called a mathematical framework.
- A scientific theory is not “speculative”. In modern science, a speculative report or proposal is called a **hypothesis**.

Entertainment and Multimedia Computing

- Focus on the design, development, and implementation of digital content for entertainment and multimedia purposes.
- An interdisciplinary domain integrates computer science, digital media, and creative arts to produce interactive and engaging experiences for users.
- Involves a wide range of applications, including video games, virtual and augmented reality, animation, audio and video production, and interactive storytelling.

Theory of Computation

- *Using symbols and digits, it involves the efficiency of problem-solving on a model of computation by using an algorithm.*
- One of its major branches is **automata theory** which studies abstract machines and contributes to the development of artificial intelligence.

Theory of Computation

- The theory of computation is mainly concerned with the following question:

What are the fundamental capabilities and limitations of computers?

The Three Great Insights of Computer Science

Philosopher William J. Rapaport, a researcher of artificial intelligence and computational linguistics, summarized the observations of notable contributors to computer science such as Leibniz, Boole, Morse and Turing:

- A computer can represent anything with only two objects.
- A computer can perform anything using only five actions.
- A computer can combine its five actions in only three ways.

Information Technology

- The technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data.
- The focus of IT is the distribution of data and information primarily through the use of computers, and to a lesser extent through the use of telecommunication equipment and television broadcast.
- IT companies and professionals are often referred to as the “**tech sector**”.

Data Processing Concerns

An IT professional is primarily concerned with the following:

- Manipulating data
- Storing data
- Retrieving stored data
- Transmitting or broadcasting data
- Managing large amounts of data, often through a database or data warehouse
- Information ethics, including privacy concerns when data is stored or broadcasted

Computing Industry in the Philippines

The computing industry in the Philippines, as part of the Information Economy (IE), has seen significant development in recent years. According to the Philippine Statistics Authority (PSA), the IE encompasses sectors that use Information and Communication Technology (ICT) for the production, storage, and transmission of information, and includes both ICT and Content and Media sectors.

Computing Industry in the Philippines

Key findings from recent PSA surveys, including the 2021 Survey on Information and Communications Technology (SICT), highlight these trends:

1. Growth in ICT Utilization

Many industries have seen increased use of computers and internet connectivity. In 2021, about 57.9% of employees in the core IE routinely used computers at work, while 53.3% had internet access. The ICT-enabled services sector had a higher rate of computer and internet use, with 83.5% of employees routinely using computers.

Computing Industry in the Philippines

2. Expansion of Mobile Transactions

From 2017 to 2019, there was a substantial increase in businesses using mobile phone transactions, growing by 133.1%. This reflects the increasing reliance on mobile technology for business operations.

3. E-commerce and Digital Engagement

The use of e-commerce has been growing, as more businesses engage in online transactions. Social media presence also saw a significant rise, with nearly half of establishments across various sectors now maintaining social media accounts

Computing Industry in the Philippines

4. Employment in the Computing Industry

In 2021, the ICT services sector employed around 752,142 workers, a large proportion of whom routinely used computers.

Computing Industry in the Philippines

ICT Sector

- **ICT Manufacturing Industries**
- **ICT Trade Industries**
- **ICT Service Industries**
 - Software publishing
 - Telecommunication services
 - Computer programming, consultancy and related services
 - Data processing, hosting and related activities; web portals
 - Repair of computers and communication equipment

Computing Industry in the Philippines

- Content and Media Sector
- Publishing activities
- Motion picture, video and television program production, sound recording and music publishing activities

Career Opportunities

Computer and Information Research Scientists	Computer and information research scientists design innovative uses for new and existing computing technology.	Master's degree	\$140,910
Computer Network Architects	Computer network architects design and implement data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets.	Bachelor's degree	\$130,390
Computer Programmers	Computer programmers write, modify, and test code and scripts that allow computer software and applications to function properly.	Bachelor's degree	\$98,670
Computer Support Specialists	Computer support specialists maintain computer networks and provide technical help to computer users.	Require some computer knowledge.	\$61,550

Career Opportunities

Computer Systems Analysts	Computer systems analysts study an organization's current computer systems and design ways to improve efficiency.	Bachelor's degree	\$103,790
Database Administrators and Architects	Database administrators and architects create or organize systems to store and secure data.	Bachelor's degree	\$123,100
Information Security Analysts	Information security analysts plan and carry out security measures to protect an organization's computer networks and systems.	Bachelor's degree	\$124,910
Network and Computer Systems Administrators	Network and computer systems administrators install, configure, and maintain organizations' computer networks and systems.	Bachelor's degree	\$96,800

Career Opportunities

Software Developers, Quality Assurance Analysts, and Testers	Software developers design computer applications or programs. Software quality assurance analysts and testers identify problems with applications or programs and report defects.	Bachelor's degree	\$131,450
Web Developers and Digital Designers	Web developers create and maintain websites. Digital designers develop, create, and test website or interface layout, functions, and navigation for usability.	Bachelor's degree	\$95,380

<https://www.bls.gov/ooh/computer-and-information-technology/>

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THANK YOU.

ANY QUESTIONS?

Worksheet 01

In $\frac{1}{2}$ cross-wise yellow paper.

1. Pick *one of the career opportunities in the computing industry* which was discussed in class.
2. In at least 50 words each, answer the following questions and thoroughly explain your stand:
 - a. Is the career opportunity closer to computer science, or to information technology?
 - b. Would you choose that career opportunity as your life-long career? Explain why.