**­buEksamen INFO110 2022**

Important subjects:

**Information system:**

An information system is an organized system designed to collect, store, manipulate, analyse, and present data. It is built on four principles: tasks, humans, structure, and technology. Essentially it is something that automates a lot of tasks we human would spend time doing ourselves.

**Computer-based Information system:­­­**

Hardware: The physical infrastructure (the computer, equipment, headsets etc. Software: the digital programs that runs on the hardware (programs, app, operative systems, something that is programmed)

Database: a place that allows storing, manipulation and presenting of data. Store large data here and later use it.

Network: connect your information system to other systems and to people all over the world. TCP/IP, UDP/IP etc.

**Data, information, and knowledge:**

Data: collected raw data, straight from the observation without any analysing or organization. No column names or measuring units.

Information: analysing and organizing of the data. Data here becomes more informative; we now know what the data is.

Knowledge: how do we use the information to solve or do something, what value does it give us.

Data Information Knowledge

4.5 4.5 + 1 (GPA) This student can enter the school due to his high GPA

3.4 3.4 +1 (GPA) This student can not enter the school due to his low GPA

**ER diagram:**

Business rules, data, and connections. Consists of entities, attributes and relationships. How does entities connect to other entities or items, what are their relationships between them.

**Data warehouse framework:**

Shows how data is stored and used, how the software connects with hardware, and how the data is presented to users. Source systems -> data integration -> storing data -> users

**Business process:**

An ongoing collection of related activities that create a product or service of value to an organisation, its business partners and/or its customers. Consist of input, resources, and output.

**Ethics:**

Not laws, but what morals we have surrounding creating and usage of IT systems. Privacy issues

**GDPR:**

General Data Protection Regulation.

**Social engineering:**

Attack in which the perpetrator user skills to trick or manipulate legitimate employees into providing confidential company information such as passwords.

**Ethernet:**

System that connects several computer systems to form a local area network (LAN), with protocols to control the passing of information. They can share data over a shared cable.

**LAN:**

Connection of multiple computers locally working together and sharing data over an ethernet cable.

Types of cables:

**IP address:**

Each computer connected to the internet is given a unique address called IP address. Series of four numbers (one byte each), separated by dots. Range of each of these number (0-255) allows for billions of addresses.

**Domain:**

Related group of networked computers.

**Network protocols (OSI):**

Application layer, transport layer, network layer, physical layer etc. They work together with protocols to share and process data.

**Malware:**

Malicious Software, intrusive software that is designed to damage and destroy computers and IT systems. Examples: viruses, trojan horses, worms, spyware, adware, and ransomware.

**Porters Value Chain:**

To succeed with your business, you need to have control over how your business inputs gets transformed to business output, and how much more value these outputs have than the inputs. This is used when calculating profit margins, value created and captured – cost of creating that value = margin.

Porters value chain looks at the various systems in the business and how they work together to transform the inputs to outputs that consumers purchase. It shows a chain of activities that is common for all businesses, divided into primary and support activities.

The primary activities focus on the physical creation, sale, maintenance and support of a product or service:

**inbound logistics** (receiving, storing, and distributing inputs internally. Supplier relationships.)

**operations** (transformation activities that change input into outputs that sold to customers. Value is created here)

**outbound logistics** (delivering the product or service to your customer. Collection, storage, and distribution systems)

**marketing & sales** (convince clients to purchase from your instead of others. How you present your idea, how you pitch it are the sources of value here)

**service** (maintaining the value of your product after purchase)

The support activities support the primary functions above:

**Procurement (purchasing)** (getting the resources the business needs to operate, negotiating vendor prices)

**HR Management** (recruitment, hiring, training, motivation, rewards, and retaining workers)

**Tech development** (up to date IT system, keeping their system safe and protected, having top tier IT systems)

**Infrastructure** (accounting, legal, administrative, and general management are support infrastructures to the primary activities)

**Micro:** Line-of-sight wireless communication technology. Can be interrupted by environmental changes. High-bandwidth, relatively inexpensive.

**Radio:** Telecommunication by radio waves. Transmitting and receiving equipment. Messages are transmitted from the radio transmitter and a transmitter antenna. High bandwidth. Inexpensive and easy to install. Signals pass through walls.

**Satellite:** Object that has been intentionally placed into orbit. High-bandwiidth. Large coverage area. Expensive. Line-of-sight. Can experience propagation delay. Must have encryption and top tier security.

**Infrared:** Wireless mobile technology used for device communication over short ranges. Low-range, line-of-sight and can’t penetrate walls. Low to medium band width.

**Geo:** Geostationary Earth Orbit. 36.000 km. 8 Satellites. TV Signals. Global coverage. Provides internet service to distant areas of earth. Observation of weather conditions and global telecommunication. Has some propagation delay. Can be disturbed by the environment. Costly.

**Meo:** Medium Earth Orbit. 5000 to 20.000 km. 10-12 satellites. GPS, Global Positioning Systems.

**Leo:** Low Earth Orbit. 500 to 1200 km. Many satellites. Used for phone and internet. ISS is found in this orbit. Earth observation satellites are in LEO due to them being closest to earth.

**Web 1.0 & 2.0 (syntactic web):**

Web 1.0: First version of the web. Read only. Web as a reading platform. Static. Impersonal and centralized.

Web 2.0: Read and write collaborations. Web as a publishing form. Collective intelligence. Open source and dynamic. Storing of data (cloud). Collaborative. Personal and tailored.

**Intranet:** Part of the internet which is privately own by a particular firm. Accessible only by users given permission, employees with login details. Safe. Limited users. Private and low traffic. Limited info and cannot be viewed or uploaded by anyone.

**Internet:** Connects different network of computers together. Anyone can access it. Not as safe as intranet. Unlimited users. Public and heavy traffic. Unlimited info and can be viewed and uploaded by anyone.

**Web 3.0 (semantic web):**

Ai-Driven and decentralized. A web built on a blockchain where data is not centralized by big firms and companies but decentralized on every user of the web.

**ERP – Enterprise Resource Planning:**

Type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, risk management, and compliance, and supply chain operations.

Advantages: organizational flexibility and agility, decision support, quality, and efficiency.

Disadvantages: Companies may need to change their methods to succeed. ERP systems can be complex, expensive and time consuming to implement.

**ERP 2 system:** be able to describe this system.

**Waterfall method:**

Suited for large, multi-agent projects with need for security. Carried out sequentially, each stage is assured, each stage starts at the agreed baseline, no stage is repeated. Requirements -> design -> implementation -> verification -> maintenance.

**Agile Development:**

Carried our iteratively. Each stage done to assure best possible equality. Development is divided into several stages. Stages can be repeated. Suited for small to medium stage products.

**Traditional Development**

**Scrum:**

Backlog with list of what is required, ranked by importance. Team selects topics and does as much as they can commit by end of sprint. Scrum master, sprint reviews, sprint retrospective, daily scrum meetings.

**Iterative development:**