**E01 Test 2 Study Topics**

**Business Information Systems**

**Test Format**: - **Friday April 16, 2015**

Multiple Choice – 30 marks

Short Answer – 45 marks

**Material To Review**:

Class Notes on Types of Information Systems, Competitive Advantage, Business Organizations, Excel, Data Management, Data Warehousing

Labs 2 - 6

Assignment 4

**Summary of Topics**

**Information System Concepts**

1. Information Technology and Information System definitions

* **Information Technology**: the application of [computers](https://en.wikipedia.org/wiki/Computer) to store, retrieve, transmit and manipulate [data](https://en.wikipedia.org/wiki/Data_(computing)), often in the context of a business or other enterprise.
* **An information system** is software that helps you organize and analyze data. This makes it possible to answer questions and solve problems relevant to the mission of an organization.

1. Data vs Information vs Knowledge. What’s the difference?

* **Data:** refer to a description of things, events, activities, and transactions that are recorded, classified, and stored but not organized to convey any specific meaning.
  + example: A student grade in a class

**Information:** refers to data that has been organized so that it has meaning and value to the recipient.

* + example: Grade point averages are data, but a student’s name coupled with his or her GPA is information
* **knowledge**: consists of data and/or information that have been organized and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current business problem.
  + example: A company recruiting at your school has found over time that students with grade point averages over 3.0 have had the most success in its management program.

1. Types of Information Systems – be able to give definitions and examples of: FAIS, TPS, ERP, E-Commerce, OAS, DSS, SCM, Expert System, Dashboard \*\*\*

* **FAIS** (Functional area information systems): support particular functional areas in an organization.
  + example: System for processing payroll
* **TPS** (Transaction processing system): support the monitoring, collection, storage, and processing of data from the organization’s basic business transactions.
  + Example: Store checkout point-of-sale terminal
* **ERP** (Enterprise resource planning systems): are designed to correct a lack of communication among the functional areas.
* Example: Oracle
* **E-Commerce**: another type of inter-organizational information system.
* Example: Anything online that deals with the handling of money
* **OAS** (Office Automation System): typically support the clerical staff, lower and middle managers, and knowledge workers. These people use OASs to development documents, schedule resources, and communicate.
* Example: Microsoft Word
* **DSS** (Decision support system): provides access to data and analysis tools. Used to support and enhance decision making.
* Example: SPSS
* **SCM** (Supply Chain Management System): manages flows of products, services, and information among organizations.
* **Expert** **system**: attempt to duplicate the work of human experts by applying reasoning capabilities, knowledge, and expertise within a specific domain.
  + Example: Credit card approval analysis
* **Dashboard**: support all managers by providing rapid access to timely information and direct access to structured information in the form of reports.
  + Example: Status of sales by product

1. Supply Chain definition

An organization’s supply chain describes the flow of materials, information, money and services from suppliers of raw materials through factories and warehouses to end customers.

1. Porter’s 5 Competitive Forces – know what they are, and how they are used – be prepared to analyze a case using these forces \*\*\*
2. The threat of entry of new competitors

Other businesses could branch into your field of business and take away from your sales.

1. The bargaining power of suppliers

The presence of powerful suppliers reduces the profit potential in an industry. Suppliers increase competition within an industry by threatening to raise prices or reduce the quality of goods and services

1. The bargaining power of customers

refers to the pressure consumers can exert on businesses to get them to provide higher quality products, better customer service, and lower prices. When analyzing the bargaining power of buyers, the industry analysis is being conducted from the perspective of the seller

1. The threat of substitute products or services

Often can be disruptive technologies.

1. The rivalry among existing firms in the industry
2. What is a value chain?

* A value chain is a network of activities that improve the effectiveness (or value) of a good or service.
* Example: A blob of rubber is turned into a tire. This increases its value. The tire then becomes commercially available. Then there are services to have the tires put on your vehicle. These steps all increase the value of this “blob of rubber”

1. Porter’s Value Chain model – primary vs support activities \*\*\*

* **Primary** **activities**: In Porter's value chains, Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Service are categorized as primary activities.
* **Support** **activities**: Secondary activities include Procurement, Human Resource management, Technological Development and Infrastructure

1. Strategies for Competitive Analysis – know what they are and how they are used – be prepared to analyze a case using these forces \*\*\*
   1. Cost Leadership
   2. Differentiation
   3. Innovation
   4. Operational Effectiveness
   5. Customer-orientation
2. The role of the IS department
3. The definition for the acronym, and main role of CEO, CIO, COO, CTO, CFO, CPO

* **CEO**: Chief Executive Officer

Highest ranking executive in a company

* **CIO**: Chief Information Officer

Most senior executive in a company responsible for the information technology and computer systems that support enterprise goals.

* **COO**: Chief Operating Officer

Person who reports all day-to-day changes directly to CEO

* **CTO**: Chief Technology Officer

Person who is focused on scientific and technological issues within an organization

* **CFO**: Chief Financial Officer

corporate officer primarily responsible for managing the financial risks of the corporation

* **CPO**: Chief Privacy Officer

Responsible for ensuring the ethical and legal use of information within organization

1. Federal government organizational structure – Minister, DM, ADM, DG, RDG

* **Minister**: Person in charge or one branch of government such as Health Canada or DND.
* **DM** (deputy minister): Responsibility for the department's day-to-day operations, budget, and program development lie with the deputy minister. Comparable to COO.
* **AMD** (Assistant deputy minister)
* **DG** (Digital Government): term consists of the digital interactions between a citizen and their government (C2G), between governments and government agencies (G2G), between government and citizens (G2C), between government and employees (G2E), and between government and businesses/commerce (G2B)

**Ethics, Privacy and Security**

1. Ethics and Privacy definitions

A branch of philosophy that deals with what is considered to be right and wrong.

1. Code of Ethics \*\*\*\*

A Code of Ethics or Code of Conduct is a collection of principles that are intended to guide decision making by members of an organization.

1. Responsibility, Accountability, Liability in ethics \*\*\*\*

* **Responsibility**: means that you accept the consequences of your decisions and actions.
* **Accountability**: means a determination of who is responsible for actions that were taken.
* **Liability** is a legal concept meaning that individuals have the right to recover the damages done to them by other individuals, organizations, or systems.

1. Categories of ethical issues – privacy, accuracy, property, accessibility

* **Privacy** Issues involve collecting, storing and disseminating information about individuals.
* **Accuracy** Issues involve the authenticity, fidelity and accuracy of information that is collected and processed.
* **Property** Issues involve the ownership and value of information.
* **Accessibility** Issues revolve around who should have access to information and whether they should have to pay for this access.

1. Ethical issues surrounding e-mail \*\*\*
2. E-mail guidelines

* Never use the office computer for anything but business-related work.
* Do not send an e-mail that you wouldn’t want your parents to read.
* Limit giving your work e-mail to friends/relatives.
* When using your computer, pretend that someone was hiding behind the screen and watching everything you do.

1. Threats to privacy – data aggregator, digital dossier, profiling, electronic surveillance
2. Opt-in vs Opt-out privacy models.

* **Opt-in:** The opt-in model of informed consent prohibits a business from collecting any personal data unless the customer specifically authorizes it.
* **Opt-out:** The opt-out model of informed consent permits the company to collect personal information until the customer specifically requests that the data not be collected.

1. PIPEDA – what does it legislate?

* Personal Information Protection and Electronic Documents Act
* Organizations are required to establish a privacy policy, as well as procedures to ensure that the policy is adhered to

**Excel**

1. How to enter a formula.

=equationType(fromSquareLetter/number : toSquareLetter/number)

1. Absolute, relative and mixed addressing \*\*\*\*

To use absolute addressing, put a $ in front of the number or letter in the formula

1. How to use basic mathematical functions – SUM, AVG, MIN, MAX, COUNT

=**SUM**: calculates the sum of all numbers between two points

=**AVG**: calculates the average of all numbers between two points

=**MIN**: Finds the lowest value among all numbers between two points

=**MAX**: Finds the Highest value among all numbers between two points

=**COUNT**: Finds to the total number of values through all squares between two points

1. How to make decisions with the IF function

Kind of like ternary operators in Java/JavaScript.

=IF(R5 >= 60%,"passed","failed")

1. Lookups tables and the VLOOKUP function

=VLOOKUP(lookup\_value, table\_array, col\_index\_num, [range\_lookup])

**Data Management**

1. Describe why data needs to be high quality – what kind of problems come from poor quality data?

* Poor quality data can lead to data that is incorrect or irrelevant. Data needs to be well organized and kept up to date.

1. Difficulties in managing data – degradation over time, data rot, data errors \*\*\*\*

* Data becomes irrelevant or inaccurate over time
* As code is constantly changed, updated or improved, errors are made that render other sections useless and can make an entire system degrade over time.

1. Data life cycle – data, information, knowledge, wisdom

* Businesses run on data that have been processed into information and knowledge.
* Managers then apply this knowledge to business problems and opportunities.
* Businesses transform data into knowledge and solutions in several ways.
* The general process is illustrated here and is referred to as the data life cycle.

1. Definitions for DBMS

A database management system (DBMS) is a computer software application that interacts with the user, other applications, and the database itself to capture and analyze data. A general-purpose DBMSis designed to allow the definition, creation, querying, update, and administration of databases.

1. DBMS benefits – data redundancy, data isolations, inconsistency (know definitions)

* Data redundancy: prevents the same data from being stored in multiple places
* Data cannot be accessed from sections of the database that aren’t authorized to access it
* Data doesn’t contradict itself anywhere in the database

1. DBMS issues – security, integrity, independence

* Security is an issue because databases are high targets for cyber-attacks.
* Integrity is an issue because data must be specifically formatted and poorly entered data can cause many issues.
* Applications and data are independent of each other to reduce risk of data being accessed from the application.

1. RDBMS definition

Relational Database Management Systems (RDMBS)

1. Advantages of RDBMS

* Database advantages from a business perspective include:
  + Increased flexibility.
  + Increased scalability and performance.
  + Reduced redundancy.
  + Increased integrity (quality).
  + Increased security.

**Data Warehousing**

1. Transactions vs Analytics
2. Definitions of data warehouse, data mart, data mining, data cleansing \*\*\*
3. Definition of business intelligence

refers to applications and technologies for consolidating, analyzing, and providing access to vast amounts of data to help users make better business and strategic decisions.

1. ETL – define and explain \*\*\*\*

a process that extracts information from internal and external databases, transforms the information using a common set of enterprise definitions, and loads the information into a data warehouse.

1. Data warehouse characteristics – explain the cube concept and multidimensional analysis

* Subject oriented - Organized by business dimension or subject
* Consistent – all data encoded in consistent manner
* Historical – data kept for many years, for trends
* Non-volatile – data doesn’t change once in warehouse
* Multidimensional – data cube
* Relationship with relational databases

1. Advantages and disadvantages of data warehouses

* End users can access data quickly and easily via Web browsers because they are located in one place
* End users can conduct extensive analysis with data in ways that may not have been possible before
* End users have a consolidated view of organizational data

1. Advantages and disadvantages of data marts

Advantages:

* Data marts are far less costly than data warehouses. A typical Data Mart costs less than $100,000, compared with $1 million or more for a Data Warehouse.
* Data Marts can be implemented more quickly, often in less than 90 days.
* Data Marts contain less information than a Data Warehouses, resulting in more rapid response, are easier to learn and navigation is easier for the end user.
* Data Marts support users of the data locally rather then centrally controlled by giving power or control to the users and user groups of the information being used.

Disadvantages:

1. OLAP vs OLTP- define, identify examples \*\*\*

* OLAP: Online analytical processing- involves the analysis of accumulated data by end users (usually in a data warehouse).
* OLTP: online transaction processing (OLTP) typically involves a database, where data from business transactions are processed online as soon as they occur.

1. Examples of data mining techniques– cluster analysis, association detection, statistical analysis – definitions and examples

* Cluster analysis: A statistical technique used to divide an information set into mutually exclusive groups such that the members of each group are as close together as possible to one another and the different groups are as far apart as possible.
* Example: Postal code segmenting
* Association detection: Reveals the relationship between variables along with the nature and frequency of the relationships
* Example: Market basket analysis
* Statistical analysis: Performs such functions as information correlations, distributions, calculations, and variance analysis

Example:

* + Forecast – Predictions made on the basis of time-series information
  + Time-series information – Time-stamped information collected at a particular frequency