LONDON METROPOLITAN UNIVERSITY

islington college
(इस्लिङ्टन कलेज)

Module Code & Module Title

CC4057NI Introduction to Information Systems

Assessment Weightage & Type

30% Individual Coursework

Year and Semester

2021-22 Spring

Student Name: Rabina Shrestha

Group: C13

London Met ID:

College ID: NP01CP4S210039

Assignment Due Date: April 16,2021.

Assignment Submission Date: April 15,2021

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

Table of Contents

List of Figures

1.Information System.

An Information System assembles raw data, arranges it into a meaningful form, stores, interprets it and circulates the information to the ones who are either looking for it or is conveyed to the people or organization by other factors. It is a crucial part of an organization and is also known as the heart of the organization. (Rainer, et al., 2020)

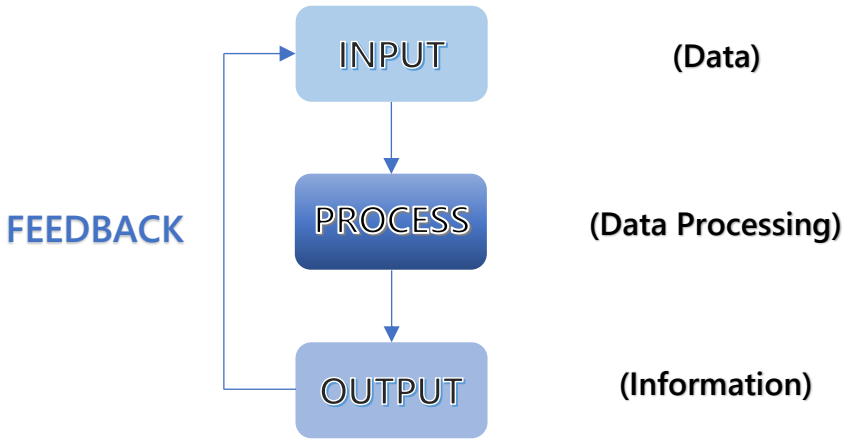

Figure 1: Information System Processing Model

To produce the information that an organization requires; Input, Process and Output are the main three activities in an Information System.

Input gathers the raw data from one of the two or both, internal environment and external environment.

Processing converts the raw data into a meaningful form which can be easily understood.

Output then transfers the processed data (information) to the people or activities that will utilize it.

If the preferred output is not executed, then the process or input must be rectified to achieve the desired result. In order to evaluate the input / process stage, output is given back to the assigned member of the organization. This is called **Feedback**. (Laudon & Laudon, 2020)

Components of the Information System.

Information System specifies the flow of information inside a system. It is a group of components that associates to create information. The components are as follows:

- **Computer Hardware**: It is the physical part of the computer used for input, output and processing. It also consists of processor, monitor, operating system, and peripheral devices like mouse and keyboard.
- **Computer Software**: It is the applications and programs used to instruct and organize computer. It's used to examine and process the data. Computer software can be classified into application software, system software and procedures.
    - Application Software: Programs that are directly processed for a particular use by the end users.
    - System Software: Operating system program which assists and manages the operations of a computer system.
    - Procedures: Operating instructions for those who use information system.
- **People**: Manpower is required for the operation and management of the system. End user uses the information it produces. IS Specialists develop and operate information systems.
- **Data**: Data are raw material resources which will be processed into meaningful information. It must be managed properly for the welfare of the end users.
- **Network**: It refers to telecommunication networks like internet, extranet and intranet. These are fundamental resources which eases the flow of information. It includes communication media and network support.
- **Process**: It is a sequence of steps launched to achieve a desired outcome or goal.

Information Systems are interdependent components working together to assemble, process, store and disseminate information to assist decision making, analysis and control in an organization. It is a combination of software, hardware and telecommunication networks that people create to gather, set up and distribute useful data. Hardware are the physical devices which are instructed by the software to do a certain task and data are pieces of information that are manipulated by software which is later processed into a complete meaningful information. (skc161931, 2021)

Role of Information System in a Business Environment.

Information System is essential for any business, big or small. It could be used to keep up with the competition, survival, to be efficient, or to simply make things easier to manage. Nowadays, organizations use management systems to get a better vision of what the customers are anticipating or what they prefer. Information system helps organizations to analyze the behavior and measure customer satisfaction.

Six Major Roles of Information System

- **Decision Making**: Information System helps decision makers sort out beneficial information from raw data, personal knowledge, prior data and records.
- **Collaborating on Teams**: Information System enlightens all individuals about the information which helps them make decision and solve the problems effectively.
- **Gaining Competitive Advantage**: Information System is not only efficient but it also gives competitive advantage to a business entity through sharing of knowledge and a better understanding of the market.
- **Improving Individual Productivity**: The user has all the information that he/she needs which helps increase the productivity but that is only if the user has full understanding of Information System's potential.
- **Managing Operations**: Information System has made it so much easier for organizations now more so than ever as it is used to manage day-to-day operations.
- **Supporting Customers Interaction**: Information System also provides means of interaction with its customers that helps improve the services and relationships. For example: customer's feedback.

Information System is useful in various ways in today's modern era. It is a group of components that aids us in every way possible and is a powerful tool when used in a proper manner. (Wallace, 2015) (Davoren, 2018)

2.Databases.

A database is a structured set of records or data, usually stored in a computer so that it can be accessed electronically. The collection of data (database) contains information about one particular firm. It preserves any information that could be useful in the decision-making process. The data is recorded and arranged to provide a footing for future application development. (Berrington, 2017)

A good database system is important to any firm. Data should be accurate and it must be protected from damage. It should be kept in an orderly manner so that other applications can utilize the data.

In file processing systems, various files are used to store permanent records. In order to extract records from and to add on new records to the appropriate files, numbers of separate applications are written. This causes a lot of issues and some of them are featured below:

- **Data Redundancy**: Duplication of data. (Unwanted repetition)
- **Data Inconsistency**: Multiple mismatched copies of same data but not matching with one another.
- **Data Isolation**: Programming becomes complicated as all the data is isolated in different files.
- **Data Security**: Security restrictions are difficult to apply.
- **Limited Data Sharing**: As data are dispersed into numerous files and may have different formats, it is difficult to share data between applications.

(Mullins, 2021)

Advantages of using Database Management System are as follows:

- Database systems minimizes data redundancy (data repetition) to a considerable extent.
- As data inconsistency is mainly due to data redundancy, it is reduced as well along with data redundancy.
- Data security is ensured as it is easier to apply constraints so that only authorized user is able to view the data. Limited access also ensures privacy of data.
- It is more resilient compared to file processing systems.
- It is up-to-date.
- Data stored isn’t only for individuals but for the organization as a whole.

- Data can be used in multiple ways and is easily accessible to the end user.

These are several reasons why people prefer Database Management System over File System. (Arora, 2018)

Applicability of Database.

The conversion of keeping records in paper to keeping record in a database has made a huge advance in information storage and management. Database surpasses paper recordings in many ways. It doesn't take much space, also it can be easily transferred and accessed by multiple users. Instead of being contained in one piece of paper and in one location, data is being shared all over the globe through database.

Database is used almost everywhere. Whether we know about it or not, its effect is substantial in our daily lives; from banking to movies that we watch online and for many other services, database takes a major part.

Banking: Banks have thousands of transactions on a daily basis and E-Banking is really popular nowadays. It is possible for us to transfer funds through E-Banking while sitting at a place. It is only possible through Database Management System as it is the one that manages all the bank transactions.

Telecommunications: In order to store all the monthly post-paid bills and call details, DBMS is a must have for the companies who focus on telecommunication.

Social Gaming: Gathering information about one player from all over the world and serving it to players on command requires a high accessibility database as it is extremely data intensive.

Healthcare: Databases behind healthcare organizations that store large-scaled information for easy availability are immense, complex and secured.

These are a few examples on how databases are used in our daily lives. Different organizations have different database needs which can be seen above. Database not only improves efficiency but is also multi-accessible, allows structuring and categorizing of data, is versatile and creates an organized environment to work on. (Thakur, 2016)

In conclusion, Database**s** have the capability to help run an organization, and in a minor scale it can help us improve our lifestyle. Many believe that it is only intended for complex activities when in reality, it can also help us on a daily basis. DBMS offers both physical and logical data liberty. It lets application programmers and end users use same database simultaneously while maintaining ethics.

3.Database of a Graphic Designing Company.

Scenario:

The following are the steps that needs to be taken in "***Itsuki Graphic Designing Company***":

- Firstly, the client has to interact with the employee regarding the specific type of design they want.
- The employee who interacts with the client is not a specialist who designs their work but rather the one who manages the order and forwards it to the chosen department. Each department has a number of employees who are hired to maintain orders and clients.
- After the employee forwards the order to the respective department, the department's HOD, talks to the client. The pricing and other details like deadlines are discussed and the order is confirmed.
- The HOD then assigns the details of the project to the graphic designer who specializes in the respective field.

Business Rules:

1. The graphic designer must be hyper-sensitive to the client's needs and should be flexible enough to make changes just in case the client does not like the output and the client should reciprocate.
2. Deadline should be discussed beforehand for the convenience of both client and graphic designer.
3. Deposit must be given at the time of order confirmation.
4. Clients must be clear about their involvement in the project and the designer must respect their decision.
5. Designer must deliver what is promised to the client, take responsibility for any mistake and make efforts to repair damage.
6. Once the order is confirmed, the order cannot be cancelled. If in any case the order is cancelled, the deposit will not be returned and the cancelling party has to pay fine according to the contract.

Entities:

Client: Client refers to a person or organization who uses the facilities provided by the graphic designing company. The client has to be specific about the kind of designing he/she

wants. Once the department is chosen, the client has to formally discuss the project with the Head of Department and the graphic designer who will be assigned to them once the prices, designs, etc. are discussed. The allocated graphic designer and the client will go over the designs and details once again and they may remain in contact until the project is over. In case there's a breach in the contract then the party who has violated has to compensate accordingly.

Employees: The employees are the first set of people who interact with the clients and brief them about the company. Their works include helping, clearing the doubts if any and assigning time to the client in accordance to the HOD's schedule in the first stage of the workflow. They are not specialists but are regular trained employees who provide guidance to the clients.

Department: The company is divided into many sections which deals with different things. For instance, animation department is assigned to deal with orders related to animation while the video editing, film making department has deal with video editing and film making orders. Each department consists of one HOD and a group of graphic designers. The HOD assigns a graphic designer to the client after seeing the requirements.

Order: Order is a set of instructions given by the client, according to the needs and concepts that they want in the project. This stage requires a proper understanding between the client and the designer. The designer must understand the client's end objective and should have a clear idea about the end product that could fulfill the client's overall goals.

Graphic Designer: A graphic designer creates visual content to communicate messages. They create visual concepts for the client and their work includes providing the required end product. The designer must be very sensitive to what the client desires and must not promise things they cannot fulfill.

Attributes:

- **Client**

Client ID: Client ID is an identity given to the clients which consists of unique numbers generated by the company. It is stored as INTEGER data type which can be used to identify

the client. Client ID helps maintain order, search data easily, reduces redundancy and confusion.

Name: Name is a set of words by which the organization can address the client. The persons or the organization name is also recorded in the database. Searching for data using name can be a hassle as two or more person can share the same name. Thus, ClientID is considered more prominent. It is stored as VARCHAR data type.

Email: Email is one of the required information that the client has to provide in order to maintain contact with them through electronic means. It is formally used to watch over the progress of the client's design and to share ideas. It is stored as VARCHAR data type.

Contact No.: Like email, contact number is another way to communicate with the client. It is stored as INTEGER data type; clients phone number is shared with the organization for clearing the queries in case of an emergency. Clients may give their personal number or their work-related number.

Employee ID: Employee ID is designated to the employees of the company; it refers to the employee who briefed the client in the first interaction. The employee's explanation is kept in consideration in response to the client and subsequently may get a raise if the department is satisfied with his work. It is stored as INTEGER data type.

- **Employees**

Employee ID: An employee ID verifies whether a person works in the company under any department or not. It can be used to search personal data of the employees and is stored as INTEGER data type.

Name: In this attribute the name of the employee is stored in VARCHAR data type. Name refers to how the person is to be addressed according to the legal documents. Here, the company stores data according to the citizenship the employee holds.

Contact No.: This consists of the phone number of the employees which can be helpful incase of emergencies or to notify the employees. It is stored as INTEGER data type.

Department ID: It is an identification given to the employees by the company to specify their departments. If the employee of a certain department is to be called, the department ID is to be used. It is stored as INTEGER data type.

- **Department**

Department ID: There are many subdivisions in a company. Departments can be differentiated with the help of department IDs specified to them which is stored as INTERGER data type. It makes it easier for the company to evaluate which department is doing the best and the one that has more requirements.

Department Name: Department name is given to the department on the basis of their work field and specialization. It makes a clear distinction between the departments. It is stored as VARCHAR data type.

Head of Department: Each department has a head who manages the employees and acts as an interface between the employees and the company. The data is stored as VARCHAR. The HOD is considered to have the highest authority in the department which gives them a lot of responsibility. Thus, an HOD is a person with most experience in the field, has high leadership skills and an efficient work record.

- **Order**

Order ID: Order ID is an identification to the orders made by the clients to the company. This gives a confirmation that the order has been placed which can be systematically reviewed by the graphic designer and is stored as INTEGER data type.

Design: Design is a raw description of the client's order. It highlights the important points so that the graphic designer can evaluate his idea and conclude accordingly. It is stored as INTEGER data type.

Price: It is the total sum of money that the client has to pay for using the services. The amount is fixed and can be deposited in two installments, it is stored as FLOAT data type.

Department ID: It helps identify the departments chosen by the client. The department ID can help in managing the orders systematically. The data is stored as INTEGER. Department ID makes it easier for the HOD to see what orders have been completed and which orders are pending so he can take actions accordingly.

Client ID: The client may have multiple orders which can be traced with the help of client ID. It can make the order clear and persuasive for the designer. It is stored as INTEGER data type.

Designer ID: It gives an identification to the graphic designer who has been assigned to the project by the department. With the help of designer ID, the client can update himself about the credential of the designer. It is stored as INTEGER data type.

- **Graphic Designer**

Designer ID: Departments have many graphic designers. Designer ID makes it easier for the HOD to track down the graphic designers and their body of work. The HOD can also promote or increase the designer's payment with the help of this data. This data is stored as INTEGER.

Name: Name is the attribute stored by the company which is used as an identification of the graphic designer when a contract is made and is stored as VARCHAR data type.

Email: It is an essential information which is stored as VARCHAR data type, that a graphic designer must share with the company to stay in touch. Most of the information and notices are sent through email which makes it a prominent platform for communication.

Department ID: Each department has a number of graphic designers. The department ID stored as INTEGER data type makes it easier for the graphic designers to be differentiated on the basis of their departments.

Primary Key.

Primary key constraint ensures that no two rows will have the same value in the assigned column. It does not allow NULL values.

A. Client

Client ID: Client ID is chosen as the primary key. We use this constraint to ensure no client gets the same ClientID and the ClientID will be assigned as it does not allow NULL values either.

B. Employee

Employee ID: Each employee is given an Employee ID by the company to make the records manageable. Having primary key helps ensure that there are no repetitions and it is not left null.

C. Department

Department ID: There are many departments in a company. To uniquely identify each department an ID has been specified and is kept in primary key to guarantee that there are no duplications and it is not empty.

D. Order

Order ID: A certain department may have many orders to deal with so giving an order ID will make it simpler and systematic. For reducing the confusion, primary key is used.

E. Graphic Designer

Designer ID: A designer ID is an identification for the graphic designers within a department. To avoid confusion, it is kept in primary key.

Foreign Key.

Foreign key identifies relationships between two or more tables by referencing columns or set of columns, in the child table that contains foreign key to the primary key columns in the parent table. Both needs to have the same data type.

a. **Client:**
   Employee ID is the foreign key whose reference is Employee ID from the Employees table.
b. **Employees:**
   Department ID is the foreign key. Its reference is Department ID from the Department table.
c. **Order:** This table has 3 foreign keys.
   Designer ID is the first foreign key. Its reference is Designer ID from the Graphic Designer table.
   Client ID is the second foreign key. Its reference is Client ID from the Client table.
   Department ID is the third foreign key. Its reference is Department ID from the Department table.
d. **Graphic Designer:**
   Department ID is the foreign key. Its reference is Department ID from the Department table.

Type of Relationship Between Entities:

- There is one employee for many clients.

- There are many employees in one department.

- One department confirms many orders.

- Many orders are made by one client.

- One graphic designer takes many orders.

4.Entity-Relationship Diagram.

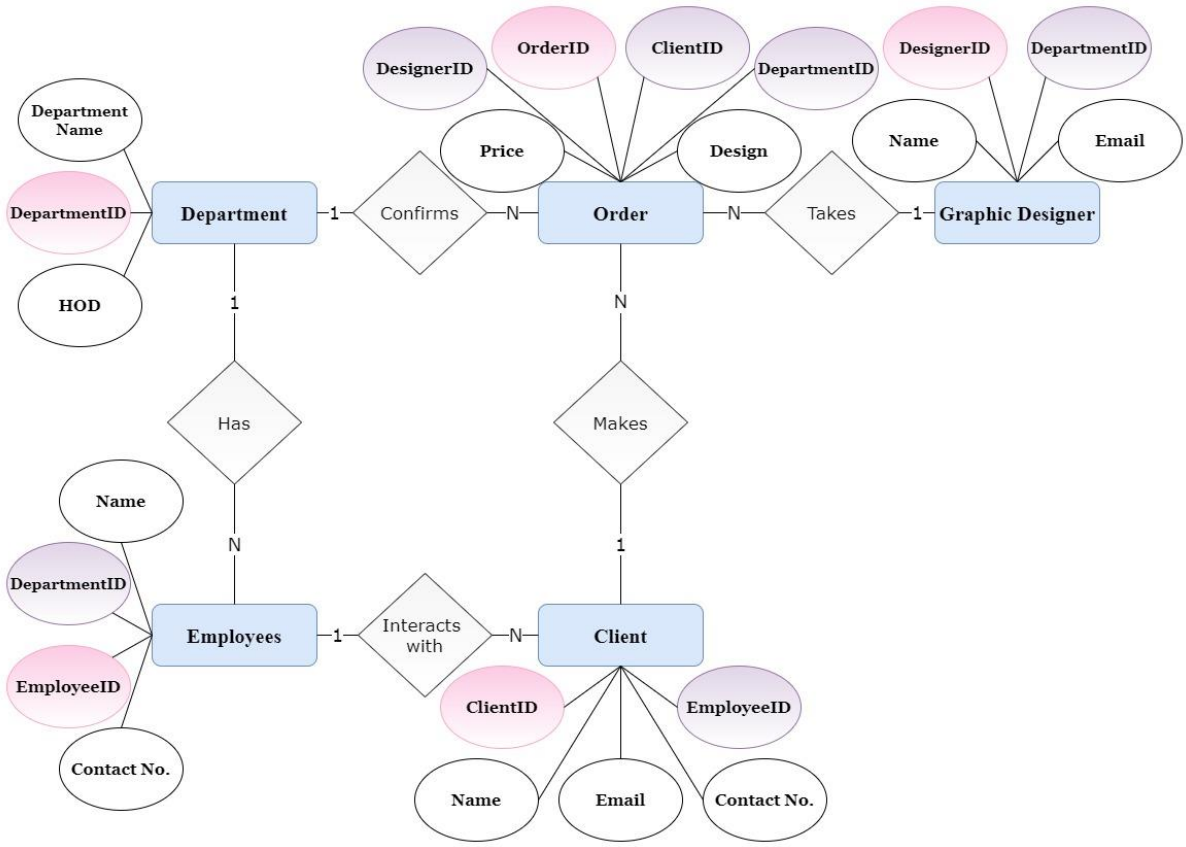

Figure 2: ERD of Itsuki Graphic Designing Company

5.Personal Reflection.

"Our very survival depends on our ability to stay awake, to adjust to new ideas, to remain vigilant and to face the challenge of change." – ***Martin Luther King Jr.***

One of the modules that we are studying in Semester 1 Computing is "Introduction to Information System". Introduction to Information System is one of the modules that has been in spectrum of my knowledge. High school offered us choices according to our interests in the boundaries of Arts, Commerce and Science. I was keenly intrigued by Commerce and wanted to know more about it. My interest in computer during my school years confirmed my decision to study IT further. Thus, I chose IP (Informatics Practices) over the other sub-divisions of commerce. I gained basic understanding of Python programming language and MySQL as it covered most of the content of our curriculum. Through my previous knowledge, I could grasp MySQL positively. As we were only taught about basic things and didn't go in depth about databases and information system, I had vague idea about it. Entity-Relationship Diagram is one such topic which was new to me. My expertise is limited to what was taught to me in my high school, furthermore, I decided to pursue bachelors' course rather than an additional diploma.

Rather than expecting something out of this module, I was more curious about what I would learn that would help enhance my knowledge about MySQL even further. I was not certain about what else the module would offer, thinking it was limited to MySQL but was fascinated by the course content.

It exceeded my expectations from my original line of thought. I found that the lectures and the workshops were taught in depth and even the coding was explained properly.

"Don't be afraid to ask questions. Don't be afraid to ask for help when you need it. I do that every day. Asking for help isn't a sign of weakness, it's a sign of strength. It shows you have the courage to admit when you don't know something, and to learn something new." ***-Barack Obama***

The lecturer and the tutor who were assigned to us were more than willing to help us regarding our queries and problems. I am extremely pleased and grateful for their efforts in guiding us.

We are taught about the how is and why is about the information system and databases. This includes its importance in our everyday lives and its big scale impact on the business world, which I am certain will help me in the near future.

The learning experience so far has been gratifying, not only is it interactive but also the method that is being used to teach this module is fairly engaging.

- Making Entity Relationship Diagrams, understanding the concept behind it.
- Learning about Information System.
- Importance of databases.
- Use of database management system.
- Knowing more about MySQL
- Usage of syntax.

The above-mentioned points, in my experience has been taught to us in the simplest and easily understandable manner which is a boon in disguise.

I have been taking references from various book and websites. “Informatics Practices” - (Arora, 2018) (Arora, 2019), the book that has been by my side throughout my high school years proved to be helpful once again in this quest to writing this report to the best of my abilities. The college lectures, video recordings, slides, and tutorials have been a great aid towards the completion of this coursework.

One of the challenges I am facing as of this moment is while dealing with entity-relationship diagram. It is confusing to me but I have been trying to figure it out with the help of teachers. Doing the assignment also helped me to enhance my comprehension on this subject.

Following are the skepticisms that I have regarding ERD (Entity-Relationship Diagram):

- Graphical Representation of ERD.
- Use of ERD components in the above-mentioned point.

I look forward to overcoming the obstacles that I am facing momentarily with the support of my teachers and classmates.

Bibliography

Arora, S., 2018. *Informatics Practices a text book for class XI.* 10th ed. s.l.:Dhanpat Rai & Co. (P) Ltd.

Arora, S., 2019. *Informatics Practices a text book for class XII.* 12th ed. s.l.:Dhanpat Rai & Co. (P) Ltd.

Berrington, J., 2017. *sciencedirect.* [Online]
Available at: https://www.sciencedirect.com/science/article/abs/pii/S1472029916302181
[Accessed 2 April 2021].

Bourgeois, D. T., 2014. *Information Systems for Business and Beyond.* s.l.:Saylor Foundation.

Castro, K., 2018. *turtorilspoint.* [Online]
Available at: https://www.tutorialspoint.com/Why-do-we-need-a-Database#:~:text=A%20database%20is%20typically%20designed,transactional%20records%2C%20salary%20details%20etc.
[Accessed 2 April 2021].

Davoren, J., 2018. *smallbusiness.chron.com.* [Online]
Available at: http://smallbusiness.chron.com/three-fundamental-roles-information-systems-business-23681.html
[Accessed 1 April 2021].

Peda.net, n.d. *Pedagogy Online.* [Online]
Available at: https://peda.net/kenya/css/subjects/computer-studies/form-three/driac2/data-processing#:~:text=Data%20processing%20therefore%20refers%20to,processing%20tools%20such%20as%20computers.
[Accessed 1 April 2021].

Gregersen, E., 2021. *Britannica.* [Online]
Available at: https://www.britannica.com/list/5-components-of-information-systems
[Accessed 1 April 2021].

Laudon, K. C. & Laudon, J. P., 2020. *Management Information Systems: Managing the Digital Firm.* 16 ed. s.l.:Pearson.

Marakas, G. & Brien, J. O., 2009. *Introduction To Information Systems.* 15 ed. s.l.:s.n.

Mullins, C. S., 2021. *SearchSqlServer.* [Online]
Available at: https://searchsqlserver.techtarget.com/definition/database-management-system
[Accessed 3 April 2021].

Rainer, R. K. et al., 2020. *Introduction to Information Systems.* 5 ed. s.l.:John Wiley & Sons.

skc161931, 2021. *geeksforgeeks.* [Online]
Available at: https://www.geeksforgeeks.org/components-of-information-system/
[Accessed 1 April 2021].

Thakur, S., 2016. *what is DBMS.* [Online]
Available at: https://whatisdbms.com/application-and-uses-of-database-management-system-dbms/
[Accessed 3 April 2021].

Wallace, P., 2015. *Introduction to Information System.* 2nd ed. s.l.:Pearson.

Whiteley, D., 2013. *An Introduction to Information Systems.* s.l.:Macmillan International Higher Education.