

# KIBABII UNIVERSITY COLLEGE

(A Constituent College of Masinde Muliro University of Science and Technology)

## UNIVERSITY EXAMINATIONS 2013/2014 ACADEMIC YEAR

FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY

**COURSE CODE: DIT 052**

**COURSE TITLE: RAPID APPLICATION PROGRAMMING**

**DATE: AUGUST, 2014**

**TIME: 2 Hrs**

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### INSTRUCTIONS

ANSWER ANY TWO QUESTIONS

Q1.

Define the following as used in visual basic programming:-

- |             |               |
|-------------|---------------|
| i. Argument | iii. Function |
| ii. Array   | iv. ODBC      |

(8 Marks)

Argument – This are values a function receives after it has been called by a function call

Array – This is a memory variable that stores values of the same type.

Function – Is a sub program that completely perfoms a given task and gives a return

ODBC – Open dataBase Connector that facilitates connectivity to the Data Sources.

Using the necessary examples, discuss the Visual Basic Programming control structures

(9 Marks)

Differentate between a DAO and an ADODC

(3 Marks)

Data Access Object is a control that facilitates a Visual Basic program to communicate to the database but has limitations of adaptability to database advancements while ActiveX Data Object Data Connector also connects a database to a Visual Basic Program but has adaptability capabilities to future databases.

Q2.

Given the following Database tables, define a user interface for that'll capture data for each table.

**Patients** (PatientNo, Surname, OtherNames, Age, NextOfKin)

**Consultant** (ConsultantNo, PatientNo, Symptoms, Diagnosis, Prescriptions, Consultant)

**Pharmacy** (PatientNo, Drugs, Instructions, Pharmacist)

**Accounts**(PatientNo, AmountPaid, Balance, Accountant) (10 Marks)



Discuss the output of the following code

(5 Marks)

```
Global Dataconn As New ADODB.Connection
```

```
Sub main()
```

```
Set Dataconn.ConnectionString = "DB"
```

```
If Dataconn.State = 1 Then Dataconn.Close
```

```
Dataconn.Open
```

```
End Sub
```

*This is a connection through the Open Database Connector, the ODBC, Data Sources.*

Briefly outline the phases in a System Development Cycle

(5 Marks)

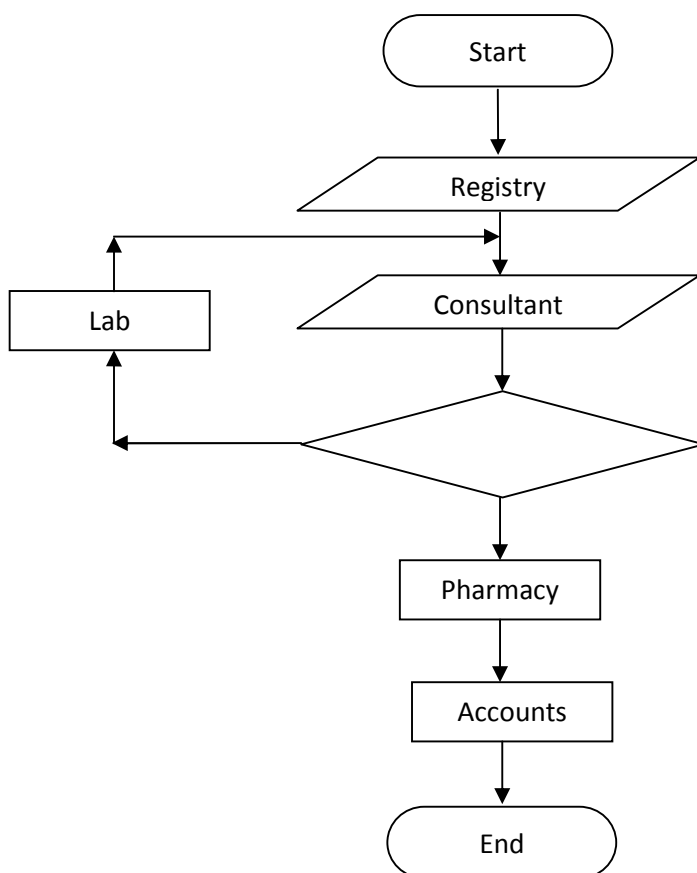
1. **Analyze:** Define the problem. Be sure you understand what the program should do, that is, what the output should be. Have a clear idea of what data (or input) are given and the relationship between the input and the desired output.
2. **Design:** Plan the solution to the problem. Find a logical sequence of precise steps that solve the problem. Such a sequence of steps is called an **algorithm**. Every detail, including obvious steps, should appear in the algorithm. In the next section, we discuss three popular methods used to develop the logic plan: flowcharts, pseudocode, and top-down charts. These tools help the programmer break a problem into a sequence of small tasks the computer can perform to solve the problem. Planning also involves using representative data to test the logic of the algorithm by hand to ensure that it is correct.
3. **Choose the interface:** Select the objects (text boxes, command buttons, etc.). Determine how the input will be obtained and how the output will be displayed. Then create objects to receive the input and display the output. Also, create appropriate command buttons to allow the user to control the program.
4. **Code:** Translate the algorithm into a programming language. **Coding** is the technical word for writing the program. During this stage, the program is written in Visual Basic and entered into the computer. The programmer uses the algorithm devised in Step 2 along with a knowledge of Visual Basic.
5. **Test and debug:** Locate and remove any errors in the program. **Testing** is the process of finding errors in a program, and **debugging** is the process of correcting errors that are found. (An error in a program is called a **bug**.) As the program is typed, Visual Basic points out certain types of program errors. Other types of errors will be detected by Visual Basic when the program is executed; however, many errors due to typing mistakes, flaws in the algorithm, or incorrect usages of the Visual Basic language rules only can be uncovered and corrected by careful detective work. An example of such an error would be using addition when multiplication was the proper operation.
6. **Complete the documentation:** Organize all the material that describes the program. Documentation is intended to allow another person, or the programmer at a later date, to understand the program. Internal documentation consists of statements in the program that are not executed, but point out the purposes of various parts of the program. Documentation might also consist of a detailed description of what the program does and how to use the program (for instance, what type of input is expected). For commercial programs, documentation includes an instruction manual. Other types of documentation are the flowchart, pseudocode, and top-down chart that were used to construct the program. Although documentation is listed as the last step in the program development cycle, it should take place as the program is being coded.

Q. 3

Given the following information, in an upcoming health center, patient is required to first report at the registry where the patient details are taken. The patient is then send to the consultancy room where the consultant takes the patient's symptoms, makes a diagnosis then decided whether the patient goes to the Lab for tests or not. If he/she is send to the Lab, the patient is tested and send back to the consultant for more diagnostics and prescriptions. If not, the consultant prescribes medication then sends him/her to the pharmacy. From the pharmacy, the patient clears with the accounts before leaving.

i) Draw a flowchart diagram to represent the flow of information in the program above.

(10 Marks)



ii) Briefly define the Tables and a description of the fields that are involved in developing the database of the above system (10 Marks)

**Registry** (PatientNo, Surname, OtherNames, Age, NextOfKin)

**Consultant** (ConsultantNo, PatientNo, Symptoms, Diagnosis, Prescriptions, Consultant)

**Lab** (PatientNo, Specimen, Tests, Results, LabAttendant)

**Pharmacy** (PatientNo, Drugs, Instructions, Pharmacist )

**Accounts**(PatientNo, AmountPaid, Balance, Accountant)

Q.4 Briefly outline the phases through which a program goes through in Systems Analysis and Design  
(18 Marks)

**Preliminary System Study**

*Preliminary system study is the first stage of system development life cycle. This is a brief investigation of the system under consideration and gives a clear picture of what actually the physical system is? In practice, the initial system study involves the preparation of a 'System Proposal' which lists the Problem Definition, Objectives of the Study, Terms of reference for Study, Constraints, Expected benefits of the new system, etc. in the light of the user requirements.*

**Feasibility Study**

*In case the system proposal is acceptable to the management, the next phase is to examine the feasibility of the system. The feasibility study is basically the test of the proposed system in the light of its workability, meeting user's requirements, effective use of resources and of course, the cost effectiveness. These are categorized as technical, operational, economic and schedule feasibility. The main goal of feasibility study is not to solve the problem but to achieve the scope. In the process of feasibility study, the cost and benefits are estimated with greater accuracy to find the Return on Investment (ROI). This also defines the resources needed to complete the detailed investigation. The result is a feasibility report submitted to the management.*

**Detailed System Study**

*The detailed investigation of the system is carried out in accordance with the objectives of the proposed system. This involves detailed study of various operations performed by a system and their relationships within and outside the system. During this process, data are collected on the available files, decision points and transactions handled by the present system. Interviews, on-site observation and questionnaire are the tools used for detailed system study.*

**System Analysis**

*Systems analysis is a process of collecting factual data, understand the processes involved, identifying problems and recommending feasible suggestions for improving the system functioning. This involves studying the business processes, gathering operational data, understand the information flow, finding out bottlenecks and evolving solutions for overcoming the weaknesses of the system so as to achieve the organizational goals. System Analysis also includes subdividing of complex process involving the entire system, identification of data store and manual processes. The major objectives of systems analysis are to find answers for each business process.*

**System Design**

*Based on the user requirements and the detailed analysis of the existing system, the new system must be designed. This is the phase of system designing. It is the most crucial phase in the developments of a system. The logical system design arrived at as a result of systems analysis is converted into physical system design.*

**Coding**

*The system design needs to be implemented to make it a workable system. This demands the coding of design into computer understandable language, i.e., programming language. This is also called the programming phase in which the programmer converts the program specifications into computer instructions, which we refer to as programs. It is an important stage where the defined procedures are*

transformed into control specifications by the help of a computer language. The programs coordinate the data movements and control the entire process in a system.

### **Testing**

Before actually implementing the new system into operation, a test run of the system is done for removing the bugs, if any. It is an important phase of a successful system. After codifying the whole programs of the system, a test plan should be developed and run on a given set of test data. The output of the test run should match the expected results. Sometimes, system testing is considered a part of implementation process.

### **Implementation**

After having the user acceptance of the new system developed, the implementation phase begins. Implementation is the stage of a project during which theory is turned into practice. The major steps involved in this phase are:

- ✕✎ Acquisition and Installation of Hardware and Software
- ✕✕✎ Conversion
- ✕✕✕✎ User Training
- ✕❖✎ Documentation

The hardware and the relevant software required for running the system must be made fully operational before implementation. The conversion is also one of the most critical and expensive activities in the system development life cycle. The data from the old system needs to be converted to operate in the new format of the new system.

The database needs to be setup with security and recovery procedures fully defined.

### **Maintenance**

Maintenance is necessary to eliminate errors in the system during its working life and to tune the system to any variations in its working environments. It has been seen that there are always some errors

found in the systems that must be noted and corrected. It also means the review of the system from time to time. The review of the system is done for:

- knowing the full capabilities of the system
- knowing the required changes or the additional requirements
- studying the performance.

Q5. Giving advantages and disadvantages in each case, describe three ways in which one can connect to a database. (15 Marks)

*By use of the Data Access Object control where we insert a control then use the controls property window to set how the control interacts with the database*

*It enables easier database connectivity, hence easier for use in teaching and training purposes*

*Limits the user to connecting only to the Database applications created by earlier Database versions such as Office 97, DBase IV, etc.*

*By use of the ActiveX Data Object Database Connector, also a control that we use the control property window to connect to the database*

*It enables easier database connectivity, hence easier for use in teaching and training purposes with capabilities of adopting to newer versions of databases that utilises Data Source connectivity.*

*When the control has a problem, the programmer finds it tediously difficult to trace the source of a bug in the program since the control is a preprogrammed dll source from a different programmer prone to alterations by other malicious programs.*

*By use of the Object Database Connector, a connection through the Data Source resource found within the Control Panel.*

*Connectivity through the Data Sources found in the Control Panel application is one of the most versatile ways of database connectivity. It enables connectivity to all available data sources available within the Operating System. It is mostly utilised by professionals working in a connected environment, and if well understood, it is one of the easiest ways of connecting to the Database.*

*It involves a lot of detailed control structures such as the locking mechanisms such that amateur programmers would find it tediously complicated to learn and utilise.*

*It enables easier database connectivity*

Write a procedure that can import records from an excel worksheet

(3 Marks)

```
Dim FirstObjectvalue As Object
Dim SecondObjectvalue As Object
Dim ThirdObjectvalue As Object

Set FirstObjectvalue = CreateObject("Excel.Application")
Set SecondObjectvalue = FirstObjectvalue.Open(App.Path & "\test.xls", True)

With ThirdObjectvalue.Sheets(1)

    .Activate

    Text1.Text = .Cells(1, 1).value
    Text2.Text = .Cells(1, 2).value
    Text3.Text = .Cells(1, 3).value
```