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**DEPARTMENT :ELECTRICAL/ELECTRONICS
ENGINEERING**

COURSE: ENG224

Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality softwares. The SDLC aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates.

The software development cycle include

- ✓ Conceptualization
- ✓ Specification
- ✓ Design
- ✓ Implementation
- ✓ Testing and debugging
- ✓ Release and update

QUESTION 1

- ❖ Design the application using the software development cycle

The application would be run on a system which would be connected to a type of x ray machine in which patients are to be put and tested .nasopharyngeal swabs and throat swabs will be used to take DNA samples from the air ways and throat respectively . these samples are put in the PCR machine which is connected to the system (wirelessly or wired). The application would have a section to be filled by the patients where personal details and observable symptoms are inserted. Theses information's would be used by the application to crate an online data base where the patients results would be posted after when the application is done

analyzing them . all information obtained can be assessed by imputing the name of the patient on the field provided in the web based application

QUESTION 2



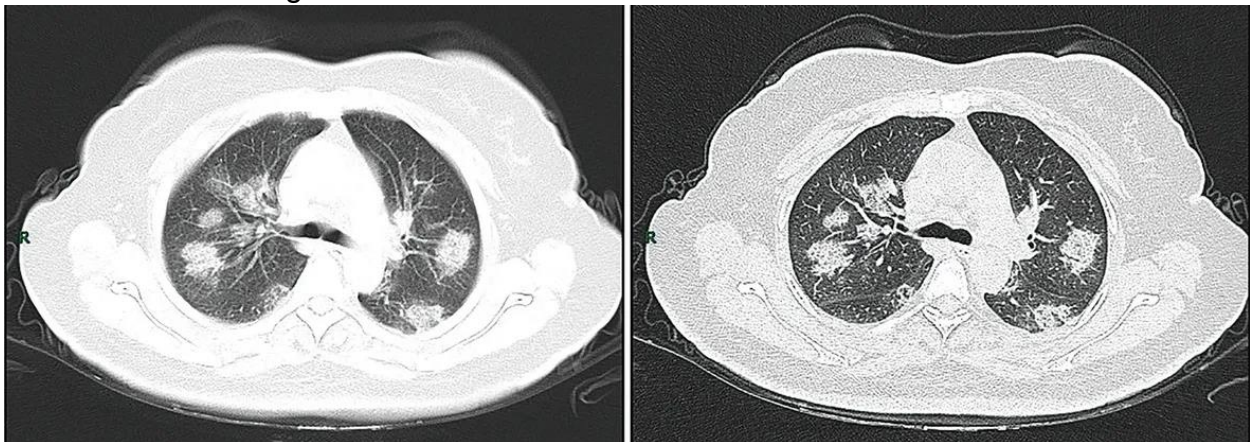
Critically discusses the hardware and software components of the application

HARDWARE CMPONETS:

- X-ray machine
- PCR machine
- Computer system

x-ray machine :

x-ray machine would take medical images of the lungs to show how far the virus has spread in the lungs .these images would be taken and sent to the system and the application would store it as part of the patients data .the application would then try matching the rate of infection on the patients image to that of pre saved images to determine the degree of infection



PCR MACHINE:

_____DNA samples would be obtained from the air ways and throats of the suspected in persons ,these DNA samples would be

inserted in the PCR machine , this machine would then try to determine if there are traces of the virus what ever the result it would be sent back to the system the application would then determine if the results are positive or negative

Computer system:

_____ The computer system would house the application software which collects all data sent by the xray ,PCR, sensors etc

Sensors:

_____ This component helps to monitor the heart rates , body temperature etc of the patient during the testing process

SOFTWARE

- FBI(form-based interface)
 - **Input controls : Input Controls:** checkboxes, radio buttons, dropdown lists, list boxes, buttons, toggles, text fields, date field
 - **Navigational Components:** breadcrumb, slider, search field, pagination, slider, tags, icons
 - **Informational Components:** tooltips, icons, progress bar, notifications, message boxes, modal windows
 - **Containers:** accordion
- A web client
- A data based application
- Programing language
- Website
- Hardware lvel of operating system
- Logical level of operating system
- Network and internet services
- Busses

FBI(form based interface):

A type of **user interface** used, for example, on the internet, to organize questions or options for the **user** so that they resemble a traditional paper **form** to be filled out by pointing to the fields and typing text, or by choosing from a list.

CLIENT:

Is an application that communicates with a web server using hypertext transfer protocol (HTTP)

A DATA BASED APPLICATION:

_____ IS a computer program whose primary purpose is entering and retrieving information from a computerized data base

Programing language:

A programming language is a formal language, which comprises a set of instructions that produce various kinds of output. Programming languages are used in computer programming to implement algorithms. Most programming languages consist of instructions for computers.

WEBSITE:

_____ **website** is a page or collection of pages on the World Wide Web that contains specific information which was all provided by one person or entity and traces back to a common Uniform Resource Locator (URL).

HARDWARE LEVEL OF OPERATING SYSTEM:

The Hardware Level
of the operating system controls the use of physical system resources,
such as the memory **manager**, process **manager**, disk drivers, etc.

LOGICAL LEVEL OF OPERATING SYSTEM:

The **Logical Level** of
the **operating system** provides high **level** functions, such as file
management, internet and networking facilities, etc. The file **system** and
the shell program (especially graphic shell programs) are the primary
ways that the typical computer user experiences a computer. Etc

QUESTION 3

❖ Support your answer with a flow chart and
algorithm

ALGORITHM

STEP 1: start

STEP 2: enter personal data (name, address , symptom, etc)

STEP 3: create data-base

STEP 4: read p,N

STEP 5: read image 1, image2 ,image3,image4,image5

STEP : scan images for infected areas

STEP 6: p==positive

STEP7: N== negative

STEP8: enter time

STEP9: set number equals to 0

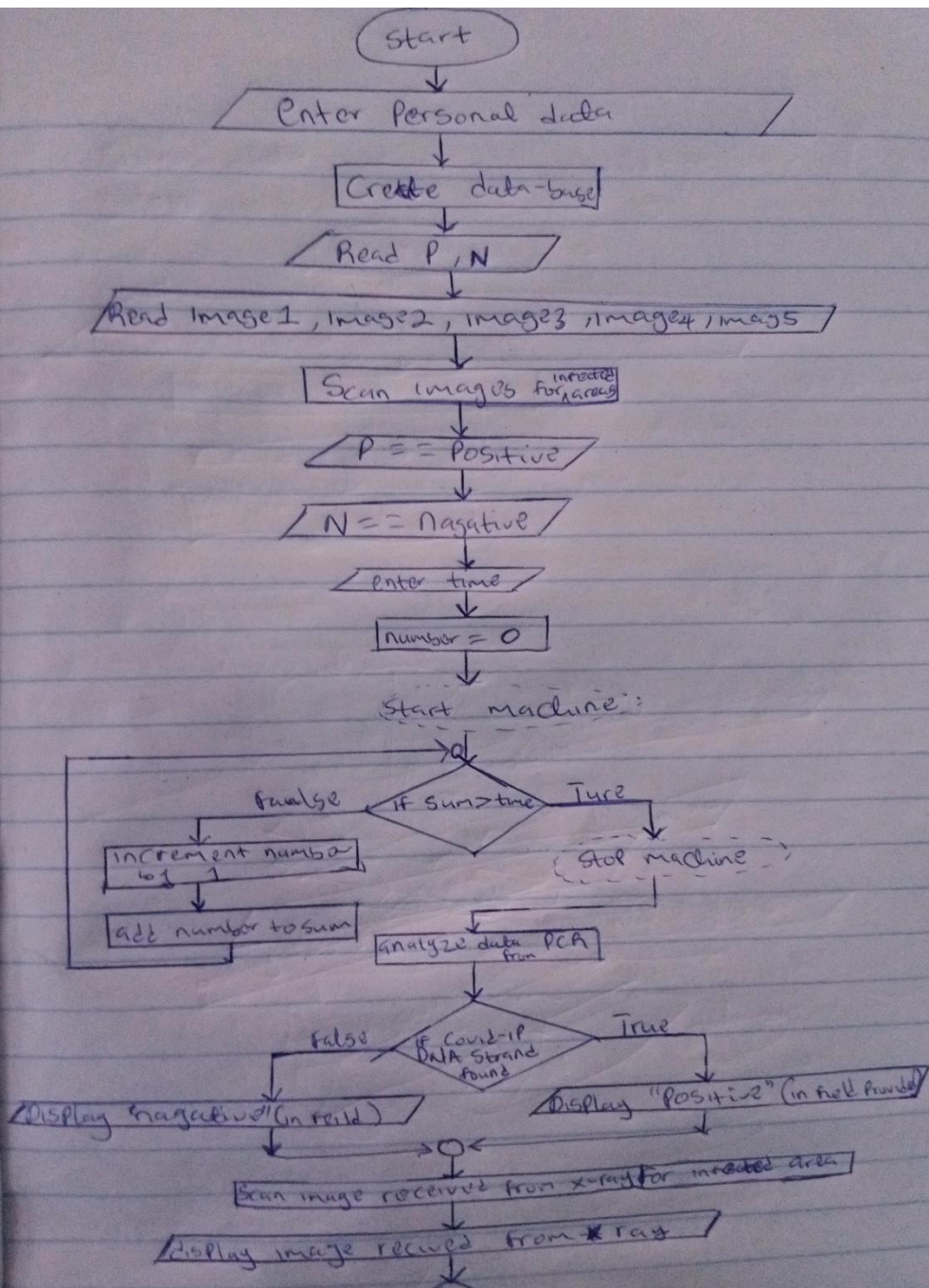
STEP10: sum =0

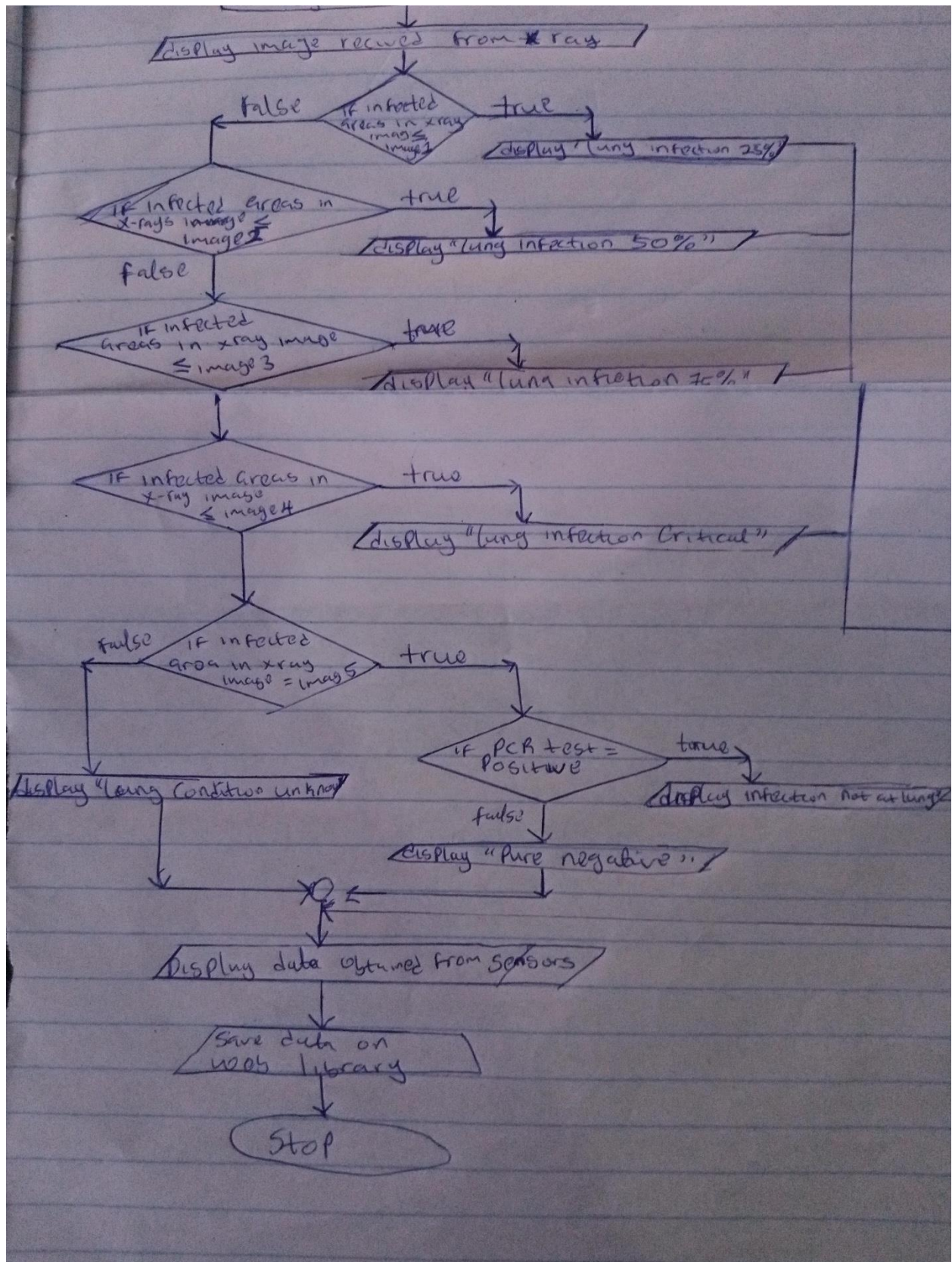
STEP11: start machine

STEP12: if sum> time

STEP13: stop machine
STEP14: else increment number by 1
STEP15: add number to sum
STEP16: analyze data from PCR machine
STEP17: if covid-19 DNA strand found
STEP18: display “positive” (in field provided)
STEP19: else
STEP20: Display “negative”(in field provided)
STEP21: scan image received from x-ray for infected areas
STEP22: display image received from x-ray(in field provided)
STEP24: IF infected areas in x-ray image \leq image1
STEP25: then display “lung infection 25%”(in field provided)
STEP26: IF infected areas in x-ray image \leq image2
STEP27: then display “lung infection 50%”(in field provided)
STEP28: IF infected areas in x-ray image \leq image3
STEP29: then display “lung infection 75%”(in field provided)
STEP30: IF infected areas in x-ray image \leq image4
STEP31: then display “lung infection critical” (in field provided)
STEP32: IF infected areas in x-ray image =image5
STEP33: IF PCR test = positive
STEP34: Then display “infection not yet at lung” (in field provided)
STEP35: ELSE
STEP36: display “pure negative”
STEP37: Display data obtained from the sensors(heart rate, pulse ,temperature at the fields provided)
STEP38: SAVE data on the web library
STEP39: STOP

Flowchart





Question 4

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