



COLLEGE OF COMPUTING & INFORMATICS
UNIVERSITI TENAGA NASIONAL, PUTRAJAYA CAMPUS
CISB323
BUSINESS PROGRAMMING

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Table Contents

Project Information	3
Company Background	3
Project Objective.....	3
Program coding (source code file).....	4
Sample Output with Explanation	18
Main page.....	18
Insert new data	19
Search	19
Update	20
Recover.....	21
Display	21

Project Information

Our company, Apex & Co. are hired to develop a national registry of COVID-19 patient's management system that can store patient's record for The Malaysian National Security Council (Majlis Keselamatan Negara MKN) and The Ministry of Health Malaysia (Kementerian Kesihatan Malaysia KKM) to hold and keep track data on those affected by COVID-19.

Company Background

Apex & Co. is a private IT company that is located at Cyberjaya, Selangor for more than 10 years. The company is one of the top IT company in Selangor that held many projects across peninsular Malaysia. Besides of other IT company around Cyberjaya, Apex & Co. is a company that specializing in developing software and data analytics.

Project Objective

- To develop a national registry of COVID-19 patient's management system that can store patient's record for The Malaysian National Security Council (Majlis Keselamatan Negara MKN) and The Ministry of Health Malaysia (Kementerian Kesihatan Malaysia KKM) to hold and keep track data on those affected by COVID-19.
- The system will assist the Government of Malaysia to locate the hospitals that the patients had been admitted and monitoring the patients for 14 days based on their admission date.
- The Government of Malaysia can use the information to do a research based on patients' age and gender on which category that had been affected the most.
- The Malaysian National Security Council (MKN) can collect the information from the system and update the data daily so that the people know the total number of cases and the location of COVID-19 had been spread around the country.

Program coding (source code file)

program-id. Program1 as "MiniProject1.Program1".

input-output section.

file-control.

select patient-file

assign to "d:/ PatientRrecord.txt"

organization is line sequential.

data division.

file section.

fd patient-file

label records are standard.

*>accepting patient record

01 patient-records.

05 patient-id pic x(7).

05 patient-name pic x(25).

05 patient-age pic x(20).

05 patient-gender pic x(10).

05 patient-nationality pic x(20).

05 patient-address pic x(20).

05 patient-admission-date pic x(20).

05 patient-status pic x(12).

working-storage section.

01 display-record.

05 record-id pic x(10).

05 record-name pic x(28).

05 record-age pic x(20).
05 record-gender pic x(10).
05 record-nationality pic x(20).
05 record-address pic x(20).
05 record-admission-date pic x(20).
05 record-status pic x(12).

01 verify-ID pic x(7).

*> initialization

01 prompt-0 pic x(10) value "ID".
01 prompt-1 pic x(4) value "Name".
01 prompt-2 pic x(3) value "Age".
01 prompt-3 pic x(6) value "Gender".
01 prompt-4 pic x(11) value "Nationality".
01 prompt-5 pic x(7) value "Address".
01 prompt-6 pic x(14) value "Admission Date".
01 prompt-7 pic x(12) value "Covid Status".

01 prompt-display0 pic x(7) value "ID".
01 prompt-display1 pic x(24) value "Name".
01 prompt-display2 pic x(18) value "Age".
01 prompt-display3 pic x(12) value "Gender".
01 prompt-display4 pic x(21) value "Nationality".
01 prompt-display5 pic x(20) value "Address".
01 prompt-display6 pic x(20) value "Admission Date".
01 prompt-display7 pic x(12) value "Covid Status".

*>Selection input.

01 entry-ok pic x.

01 yes-no pic x.

01 user-selection pic 9.

01 update-selection pic 9.

01 confirm-delete pic x.

procedure division.

program-begin.

perform Menu-Display.

*> Display menu and selection

Menu-Display.

display " " .

display " _____ " .

display "| _____ |" .

display "| Covid-19 Patient Records |" .

display "| _____ |" .

display "| 1. Insert new patient record. |" .

display "| 2. Search patient. |" .

display "| 3. Update patient information. |" .

display "| 4. Edit Patient Covid Status. |" .

display "| 5. Display Patient report. |" .

display "| 0. Exit |" .

display "| _____ |" .

display " " .

display "Enter your selection: " with no advancing.

accept user-selection.

evaluate user-selection

when 1

move "N" to entry-ok
perform get-fields
 until entry-ok = "Y"
perform cont-again

when 2

display " "
move "N" to entry-ok
open i-o patient-file
display "Search Patient by ID: " with no advancing
accept verify-ID
perform search-patient
 until entry-ok = "y"
move "Y" to entry-ok

when 3

display " "
move "N" to entry-ok
perform update-record
 until entry-ok = "y"
move "Y" to entry-ok

when 4

perform recovered-patient

when 5

display " "
move "N" to entry-ok
open input patient-file
perform display-patient-record

when 0

display " "

DISPLAY "Thank You for your service :)"

display " "

perform program-done

when other

display " ERROR!! INVALID INPUT"

perform program-done.

program-done.

goback.

*>close record file

closing-procedure.

close patient-file.

*>accept patient data to file .txt

get-fields.

open extend patient-file

display " ".

move space to patient-records.

display " ".

display prompt-0 ": " with no advancing.

accept patient-id.

display " ".

display prompt-1 ": " with no advancing.

accept patient-name.

display " ".

display prompt-2 ": " with no advancing.

accept patient-age.

display " ".

display prompt-3 ": " with no advancing.

accept patient-gender.

display " ".

display prompt-4 ": " with no advancing.

accept patient-nationality.

display " ".

display prompt-5 ": " with no advancing.

accept patient-address.

display " ".

display prompt-6 ": " with no advancing.

accept patient-admission-date.

move "Active" to patient-status.

move "Y" to entry-ok.

if patient-id = space

display "This section must be completed!"

move "N" to entry-ok.

write patient-records.

perform closing-procedure.

cont-again.

display "Continue with the record? (Y/N)" with no advancing.

display " ".

accept entry-ok.

if entry-ok = "y" or "Y"

```
display " "  
display "You can continue "  
display " "  
perform get-fields  
else  
  if entry-ok = "N" or "n"  
    display " "  
    move "N" to entry-ok  
    perform Menu-Display  
  else  
    if entry-ok not = "Y" or entry-ok not = "N"  
      display "Error!!! Restart the system."  
      display " "  
      perform Menu-Display.
```

*>SEARCH PATIENT RECORD

search-patient.

```
read patient-file next record  
at end  
  move "Y" to entry-ok.  
if verify-ID = patient-id  
  perform search-display.
```

search-display.

```
move patient-records to display-record.  
display " "  
display prompt-display0 with no advancing.  
display prompt-display1 with no advancing.  
display prompt-display2 with no advancing.  
display prompt-display3 with no advancing.
```

display prompt-display4 with no advancing.
display prompt-display5 with no advancing.
display prompt-display6 with no advancing.
display prompt-display7.
display display-record.
display "".
display "".

perform closing-procedure.

if entry-ok = "n"

 move "N" to entry-ok
 perform search-patient
 until entry-ok = "Y"
 move "Y" to entry-ok

else

 perform Menu-Display.

*> DISPLAY PATIENT RECORD

display-patient-record.

display "Patient Record".

display " "

display " "

display prompt-display0 with no advancing.
display prompt-display1 with no advancing.
display prompt-display2 with no advancing.
display prompt-display3 with no advancing.
display prompt-display4 with no advancing.
display prompt-display5 with no advancing.
display prompt-display6 with no advancing.

```
display prompt-display7.  
read patient-file  
  at end  
    move "Y" to entry-ok.  
perform display-patient-record2  
  until entry-ok = "Y" or "y".
```

```
perform closing-procedure.  
if entry-ok = "N" or "n"  
  move "N" to entry-ok  
  perform display-patient-record  
    until entry-ok = "Y" or "y"  
else  
  perform Menu-Display.
```

```
display-patient-record2.  
  move patient-records to display-record  
  display record-id with no advancing.  
  display record-name with no advancing.  
  display record-age with no advancing.  
  display record-gender with no advancing.  
  display record-nationality with no advancing.  
  display record-address with no advancing.  
  display record-admission-date with no advancing.  
  display record-status.  
  read patient-file next record  
  at end  
    move "Y" to entry-ok.
```

*>update patient record

update-record.

open i-o patient-file.

display "Enter Patient ID: " with no advancing.

accept verify-ID.

read patient-file next record

at end

move "Y" to entry-ok.

if verify-ID = patient-id

display " ".

display "Proceed to update recorded file. " with no advancing.

perform update-display-menu.

update-display-menu.

display " ".

display "_____".

display "|".

display "| Covid-19 Patient Records |".

display "|".

display "| Update Patient File |".

display "|".

display "| 1. Patient Name. |".

display "| 2. Patient Age. |".

display "| 3. Patient Gender. |".

display "| 4. Patient Nationality. |".

display "| 5. Patient Address. |".

display "| 6. Patient Admission Date. |".

display "| 9. Back to Main Menu |".

display "|_____|".

display " ".

display " ".

display "Enter your selection: " with no advancing.

accept update-selection.

evaluate update-selection

when 1

display "Enter update of Patient Name: " with no advancing

accept patient-name

perform perform-update

perform cont-update

when 2

display "Enter update of Patient Age: " with no advancing

accept patient-age

perform perform-update

perform cont-update

when 3

display "Enter update of Patient Gender: " with no advancing

accept patient-gender

perform perform-update

perform cont-update

when 4

display "Enter update of Patient Nationality: " with no advancing

accept patient-nationality

perform perform-update

perform cont-update

when 5

display "Enter update of Patient Address: " with no advancing
accept patient-address
perform perform-update
perform cont-update

when 6

display "Enter update of Patient Admission Date: " with no advancing
accept patient-admission-date
perform perform-update
perform cont-update

when 9

perform closing-procedure
perform Menu-Display

when other

display "ERROR!! RESTART SYSTEM"
perform program-done

end-evaluate.

perform-update.

rewrite patient-records.
perform closing-procedure.
display "Record successfully been updated. ".

opening-procedure-update.

open i-o patient-file.

cont-update.

display "Continue with the record? (Y/N)" with no advancing.

display " ".

accept yes-no.

if yes-no = "y" or "Y"

display " "

display "You can continue "

display " "

perform update-record

else

if yes-no = "N" or "n"

display " "

move "N" to yes-no

go to Menu-Display

else

if yes-no not = "Y" or yes-no not = "N"

display "Error!!! Go to Main Page."

display " "

go to Menu-Display.

recovered-patient.

move "N" to entry-ok.

open i-o patient-file.

display " ".

display " ".

display "Enter patient ID: " with no advancing.

accept verify-ID.

perform recover-validation


```

    until entry-ok = 'y'
move 'Y' to entry-ok.
perform closing-procedure.

recover-validation.
    read patient-file next record
        at end
            move 'Y' to entry-ok.
if verify-ID = patient-id
    display " ".
display "Is the patient with ID: " patient-id "name: " patient-name "had recovered? (Y/N) ".
accept yes-no.
if yes-no = 'y'
    move 'Y' to yes-no
    move "Recovered" to patient-status
    rewrite patient-records

else
    if yes-no = 'n'
        move 'N' to yes-no
        perform closing-procedure
        perform recovered-patient
    else
        Display "ERROR!!!!"
        PERFORM program-done.

end program Program1.

```

Sample Output with Explanation

Main page

```
Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
  0. Exit

Enter your selection:
```

This is the main page of the system. Select 1 to insert new patient record. After that, select 2 to search for patient record. Next, select 3 to update the patient information. And then, select 4 to recover the patient's record. Lastly, select 5 to display all patient report. Select 0 to exit the program.

Insert new data

```

                                Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
0. Exit

Enter your selection: 1
Patient ID: 0007

Name: Zahira

Age: 21

Gender: F

Nationality: Iraq

Address: Baghdad

Admission Date: 15/2/2021

Covid Status: Active
Continue with the record? (Y/N)

```

This is selection 1 which is to insert new patient record. Must key in the patient ID, name, age, gender, nationality, address and admission date to add the new patient record in the system. Press “Y” to continue adding new patient an “N” back to main page.

Search

```

                                Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
0. Exit

Enter your selection: 2
Search Patient by ID: 0007

ID      Name      Age      Gender      Nationality      Address      Admission Date      Covid Status
0007    Zahira      21       F           Iraq            Baghdad      15/2/2021          Active

```

This selection is to search the existing patient record. It will display the record of the patient that being searched.

Update

```
Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
  0. Exit

Enter your selection: 3
Enter Patient ID: 0007

Proceed to update recorded file.

Covid-19 Patient Records

Update Patient File

1. Patient Name.
2. Patient Age.
3. Patient Gender.
4. Patient Nationality.
5. Patient Address.
6. Patient Admission Date.
  0. Back to Main Menu

Enter your selection: 5
Enter update of Patient Address: Bangsar
Record successfully been updated.
Enter to continue with the record
```

This selection is to update the current patient data. As figure shown above, must key in the patient ID and choose the selection that need to be change. Select 1 to change patient's name, select 2 to change patient's age, select 3 to change patient's gender, select 4 to change patient's nationality, select 5 to change patient's address, select 6 to change patient's admission date and select 9 to go to main menu.

Recover

```
Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
0. Exit

Enter your selection: 4

Enter Patient ID: 0003
Record successfully been updated.
Enter to continue with the record

You can continue
```

This selection is to recover the patients' information that already in the system. Select 4 and it will display the patient ID for the user to fill in. After that, it will display the patient's ID and name for the user for the confirmation. Then, the user will select either 'Y' for Yes or 'N' for no for the confirmation.

Display

```
Covid-19 Patient Records

1. Insert new patient record.
2. Search patient.
3. Update patient information.
4. Update patient status.
5. Display Patient report.
0. Exit

Enter your selection: 5

Patient Record
```

ID	Name	Age	Gender	Nationality	Address	Admission Date	Covid Status
0001	Aim	25	M	Japan	Yokohama	12/12/2020	Active
0002	Syahir	30	M	Germany	Hockenheim	18/12/2020	Active
0003	Shamira	24	F	Malaysia	Kepong	4/1/2021	Active
0004	Afif	19	M	Malaysia	Ipoh	5/1/2021	Active
0005	Aqila	21	F	Malaysia	Melawati	8/2/2021	Active
0006	Afiq	24	M	Malaysia	Bangsar	10/2/2021	Active
0007	Zahira	21	F	Iraq	Bangsar	15/2/2021	Active

This selection is to display all the patient's record that had been key-in into the system.