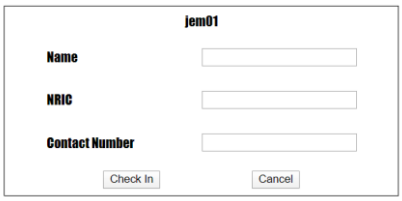
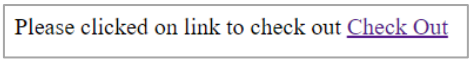
4 In order to facilitate contact tracing, a web application is to be developed to allow visitors at different locations to check in when they entered the premises and check out when they leave the premises.
An example of the check in and out workflow is as follow:

(a) Visitor uses a mobile phone to scan a QR code encoded with the url, example http://localhost:5000/jem01.
(b) The following form appears on the visitor 's mobile web browser



(c) Visitor fills up form and click Check In
(d) The web app will returned a web page containing a link for the user to check out when he/she leaves the premise as follows:



(e) After visitor clicked on the Check Out link. The following message will be displayed on the mobile web browser:

A database containing 2 tables with their data attributes is described as follows:

`Location( LocationID:STRING, Name:STRING, Address:STRING, URL:STRING)`

`Visitor (NRIC:STRING, LocationID*:STRING, Name:STRING, Contact:STRING, Date:STRING, TimeIn:STRING, TimeOut:STRING)`

Underline attribute : Primary Key
* Foreign Key

Task 4.1
Use the relevant tools or code to:

- Create a database named **`EntryDB`**.
- Create the 2 tables described above.
- Populate the `Location` table by importing the data from the file `LOCATIONS.CSV`
- If you are writing code, name your code file/s, `TASK4_1.py/TASK4_1.sql` [2]

At the entrance of each location, a QR code is encoded with the URL of the location that is stored in the `Location` table in Task 4.1.

When a visitor entered the premise, he/she will scan the QR code and the web browser will be directed to the URL for that location. The format of the URL is as follows: `http://<server_dns_name>/<location_id>`.
where
`<server_dns_name>` is the dns name of the web server.
`<location_id>` is the value of the LocationID attribute stored in the Location table.

A check-in form will be rendered on the web browser for the visitor to entered the information required to create a record in the Visitor table. The visitor will only need to enter

- name.
- NRIC.
- contact number.

Task 4.2

- Create a jinja template named checkin.html
    - The LocationID must be auto-filled and displayed in the form.
- Write Python code to rendered the checkin.html form when the visitor checks in by scanning the QR code on his/her mobile device.
- You can assume that the QR code scanner app will automatically launch a web browser and fills in the URL on the address bar. [5]

Task 4.3

Write Python code to

- retrieve the data in the form submitted by the visitor and insert a new Visitor record in the Visitor table. In addition, the following attributes in the table are to be generated automatically:
    - Date in YYMMDD format.
    - TimeIn in HHMM 24 hour.
      (YY: Year, MM:Month, DD:Day, HH:Hour, MM:Minute)
- Return a web page containing a link for the visitor to check-out as described in the example workflow. [5]

Task 4.4

When the visitor clicked on the Check Out link as described in the example workflow, write Python code to:

- Update the TimeOut in the visitor's record to indicate the time that the visitor leaves the premise
- Return a web page with a message with the visitor's NRIC as described in the example workflow. [3]

Save your Python program as
`TASK4_4_<your name>_<NRIC number>.py`
with any additional files and sub-folders as needed in a **folder** named
`Task4_<your name>_<NRIC number>`

END OF PAPER

BLANK PAGE

BLANK PAGE