For this assignment, ***either AVL-tree or B-tree or B+-tree*** are the preferred data structure. Hence, choose the tree (any type that you are comfortable with) for any storage requirement you may have, although slight preference will be given to B+tree/B-tree/AVL-tree in that order.

Physical Environment Sensor Network

A sensor network consists of spatially dispersed and dedicated sensors for monitoring and recording physical conditions of environment like temperature, sound, humidity, wind, and so on for multiple stations (you can consider different areas in city). The data from all sensors is collected at central location. Each sensor records the corresponding data at continuous time interval daily. Each sensor is represented by sensor ID (integer), sensor type, data it senses, time interval during which it senses the conditions continuously.

Write function for the following assuming that sensor database is stored ***either in AVL tree or B-tree or B+ tree*** data structure.

1. Write a function **create_sensor_network(struct sensor_node* new_node)** which will formulate the above mentioned sensor network in software. Data fields for every sensor node in the linked list should have following attributes -
    a. **sensor_ID(integer)**
    b. **sensor_type (char)**
    c. **sensor_location(charater)(or sensor station)**
    d. **duration(time interval ex. 5 min- it means that a sensor senses thetemperature , humidity etc. after every 5 min.)**

    Central repository is the location where data from all sensors is collected and it should include following things

    a. **sensor_ID**
    b. **Date**
    c. **Time**
    d. **data(integer or float)**

    Write a function **central_repository (struct record* new_record)** which will create a database of information collected from all sensors.

2. Implement a function **Install_new_Sensor()** to add sensor to the existing sensor network at specified station.
    Note: New sensor will be added only if the type of sensor to be added is not present at specified station.
3. Idle sensors are those which are not sending any information to central repository for more than 2months. Identify such idle sensors and remove them from database.

(remove means permanently delete them from database)

4. **Retrieve_info**() functions retrieves the data for sensors specified by following conditions
   A. Depending on sensor type (retrieves till date data)
   B. Depending on specified date range (multiple dates) for specific sensor type
5. Write function **sensors_in_between()** to print information of all sensors located in between any stations specified by sensor_ID range. (EX. if sensor ID range is 100- 200. Expected output is the information of all sensors with ID>=100 and ID<=200)

6. Adapt the existing data structure for sensor type which records multiple quantities. Ex. **Air quality index (AQI)** sensor which records entities like PM10, PM 2.5, nitrogen dioxide, sulphur dioxide, carbon monoxide, ground level ozone etc. and tries to find out Air quality level and pollution level. AQI is measures based on the average quantity of a particular entity measured over a standard time interval. Standard time interval for measuring averages is different for different entities (24 hours for most of the entities, 8 hrs. For PM 2.5). There should be provision for storing standard time interval for each independent entity in existing data structure. Final AQI is the highest of the AQI values calculated separately for each entity. AQI value for finding health status is as follows

AQI	Status
1-50	Good
51-100	Satisfactory
101-200	Moderately polluted
201-300	Poor
301-400	May cause respiratory illness
401-500	Severe
501 onwards	Hazardous

   a. Write a function to report or display the month during which maximum AQIis reported for all years for all stations.
   b. Write a function to display the dates on which hazardous health status isrecorded for all stations.