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ENGAGEMENT DETECTION APP

SOFT. ENGG.(CS243) PROJECT 2

GROUP 23

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INDEX

LEVEL 0 DFD

PROXIMITY SENSOR

DISTANCE DETECTED

FACE DETECTED DATA

CAMERA

0.0

ENGAGEMENT DETECTION APP

NO. OF ENGAGED STUDENTS ,
NOT ENGAGED STUDENTS

ALERT

WARNING

COMMAND

REGISTER ,

LOGIN

WARNING

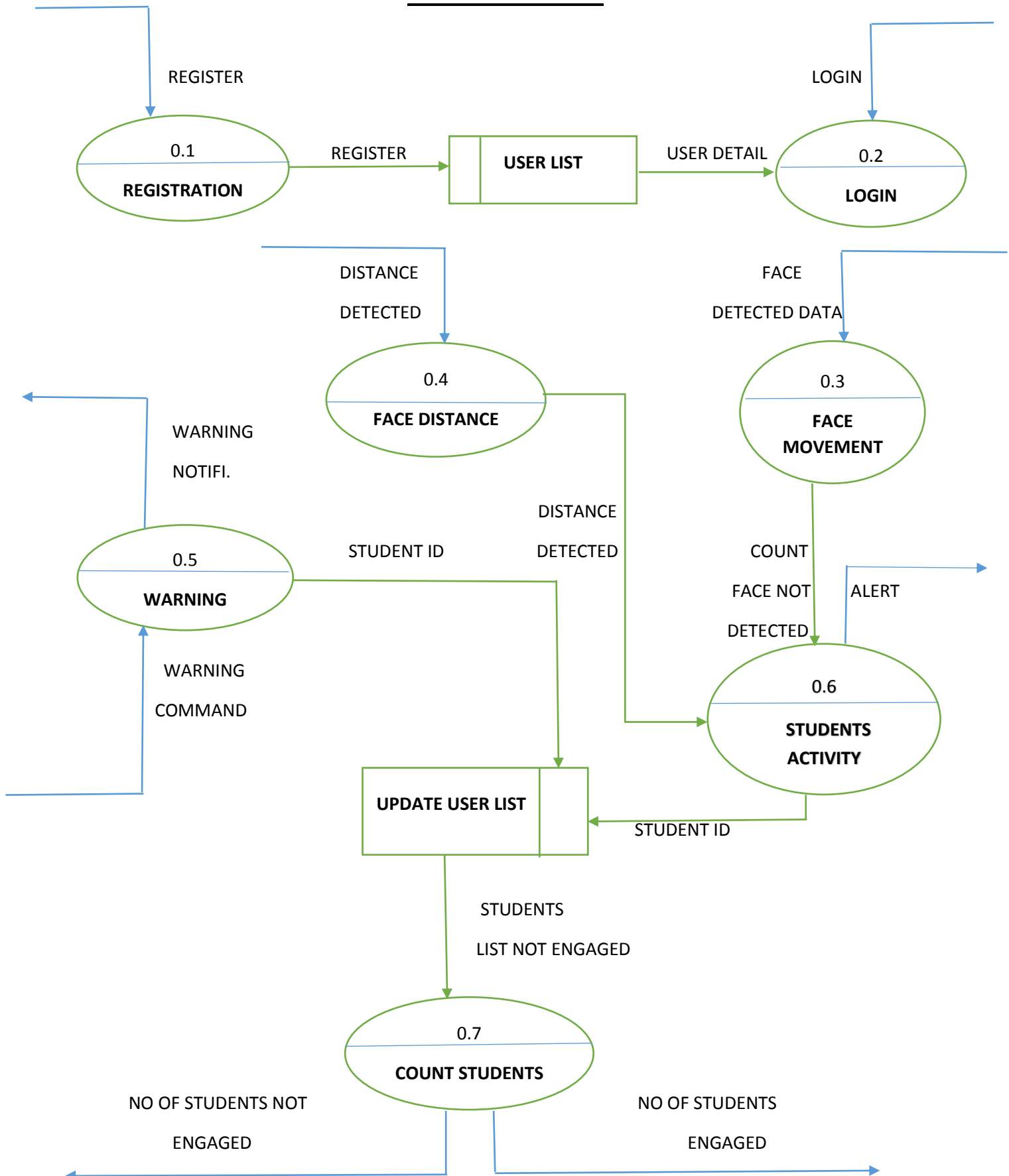NOTIFICATION

REGISTER ,

LOGIN

TEACHER

STUDENT

CONTEXTUAL LEVEL DIAGRAM

BLUE ARROW (⟶) : For data flow to other level of DFD

GREEN ARROW (⟶) : For data flow within the same level of DFD

NOTE : Use the DATA DICTIONARY whenever have any confusion about flow of any data
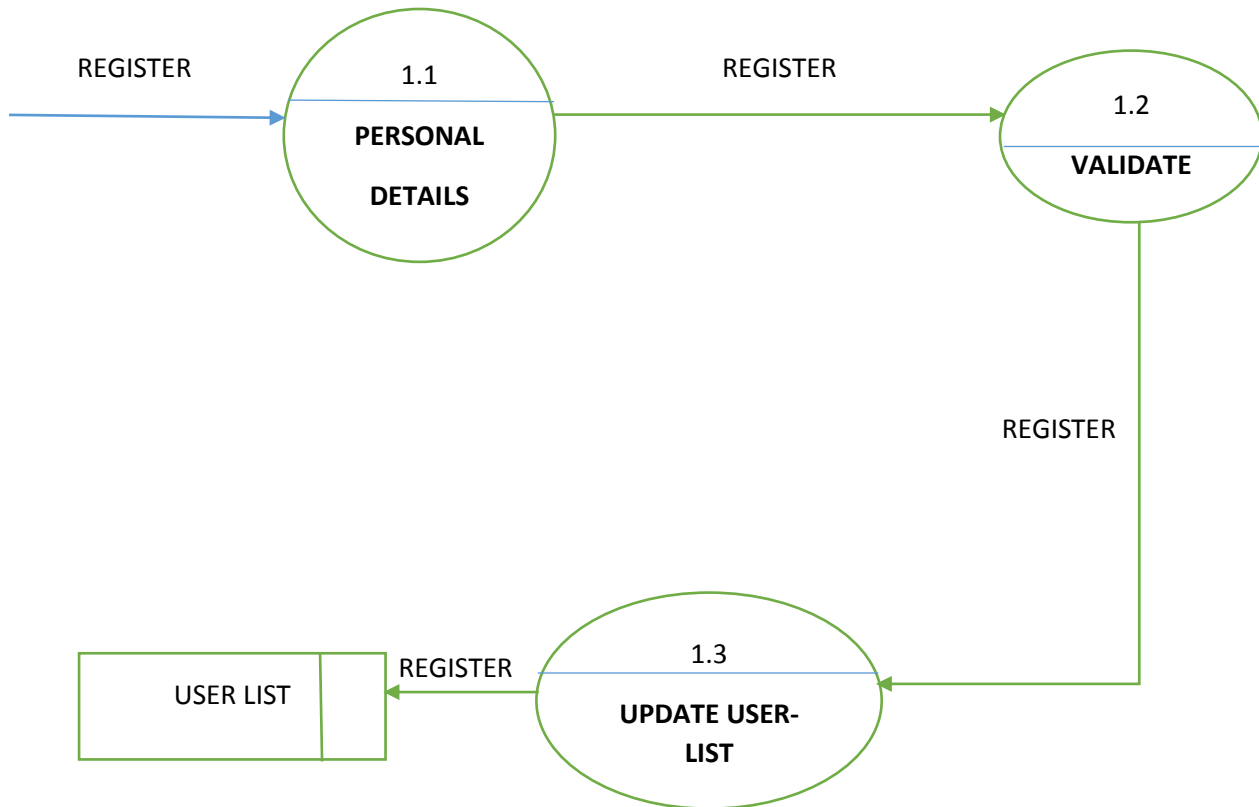
LEVEL 1 DFD

REGISTER

LOGIN

```
0.1
REGISTRATION
```
REGISTER →

USER LIST

USER DETAIL →

```
0.2
LOGIN
```

DISTANCE
DETECTED

FACE
DETECTED DATA

```
0.4
FACE DISTANCE
```

```
0.3
FACE
MOVEMENT
```

WARNING
NOTIFI.

DISTANCE
DETECTED

COUNT
FACE NOT
DETECTED

ALERT

```
0.5
WARNING
```

STUDENT ID

WARNING
COMMAND

```
0.6
STUDENTS
ACTIVITY
```

UPDATE USER LIST

STUDENT ID

STUDENTS
LIST NOT ENGAGED

```
0.7
COUNT STUDENTS
```

NO OF STUDENTS NOT
ENGAGED

NO OF STUDENTS
ENGAGED

DATA DICTIONARY : TILL LEVEL 0 AND LEVEL 1

- **REGISTER** : [username + password] Input user registration data.

- **LOGIN** : [username + password] Input login details of existing user.

- **DISTANCE** - : [integer] Distance detected by Proximity Sensor.
  DETECTED

- **FACE –** : [integer 2d-matrix] Face detected data from a Camera.
  DETECTED DATA

- **WARNING –** : [string] Command to send warning notification to all non- engaged
  COMMAND students.

- **ALERT** : [string] Alert notification (of not engaged student) to teacher and list
  of non- engaged students updates every 2 -minute.

- **NO. OF**
  STUDENTS : [integer] Number of engaged students.
  ENGAGED

- **NO. OF**
  STUDENTS : [integer] Number of students not engaged.
  NOT-ENGAGED

- **COUNT FACE** : [integer] Number of times face not detected in a time period of 2
  NOT DETECTED Minute.

- **WARNING** : [string] Warning data to particular students (with students id).
  NOTIFICATION

- **USER LIST** : [string ,integer] Details(username , password , student id) of all users
  on system   (students + teacher).

- **STUDENTS ID** : [integer] Specific id for every student in class.

- **USER DETAIL** : [stduents id (integer),username(string)] User data
  stored in user list.

- **STUDENT LIST** **:** [int array] List containing student id's of students not engaged.
  NOT ENGAGED

- **UPDATE USER** **:** [student id + not engaged] Contains all student id's + not
  LIST engaged(attribute containing their engagement details).
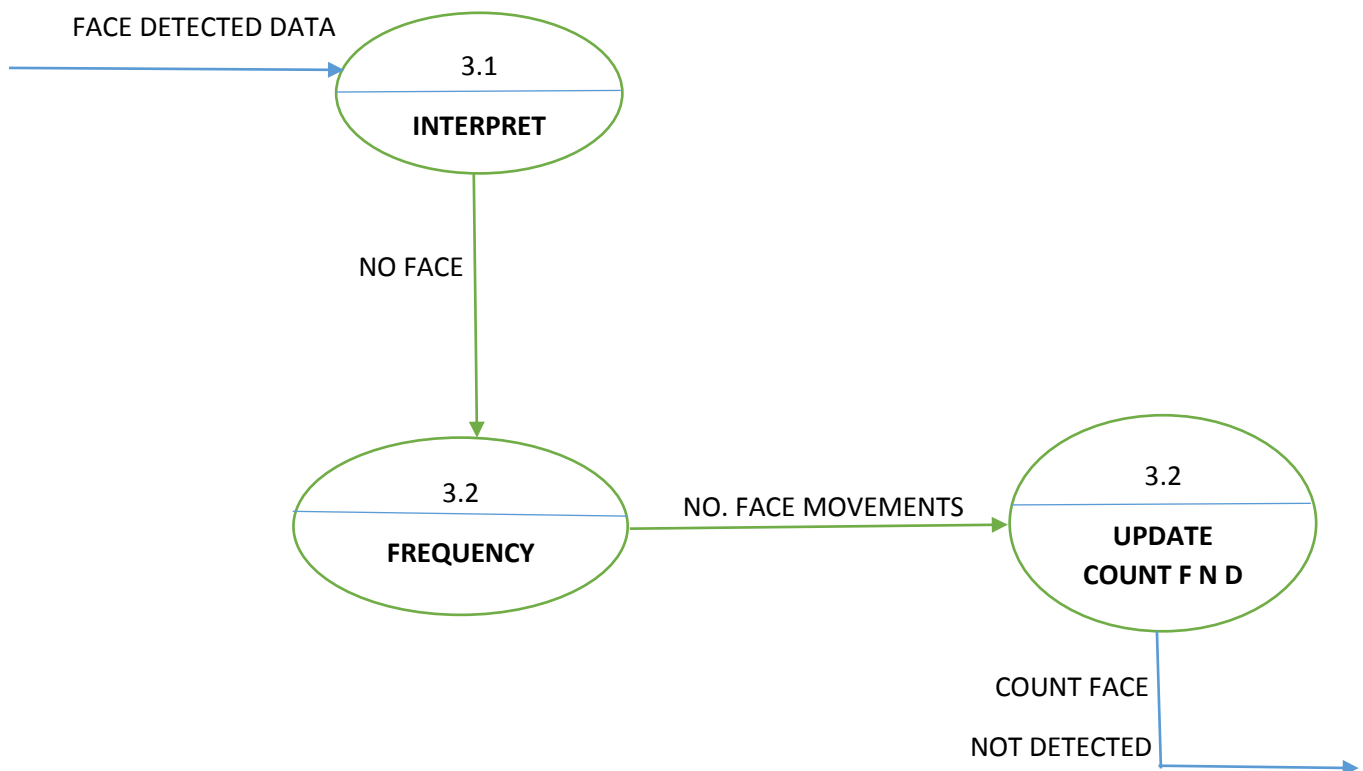
LEVEL 2 DFDs

1) REGISTRATION

2) LOGIN

USER DETAIL

LOGIN

2.1

PERSONAL

DETAIL

LOGIN

2.2

INPUT CHECKING

ENABLE

2.3

OPEN APP
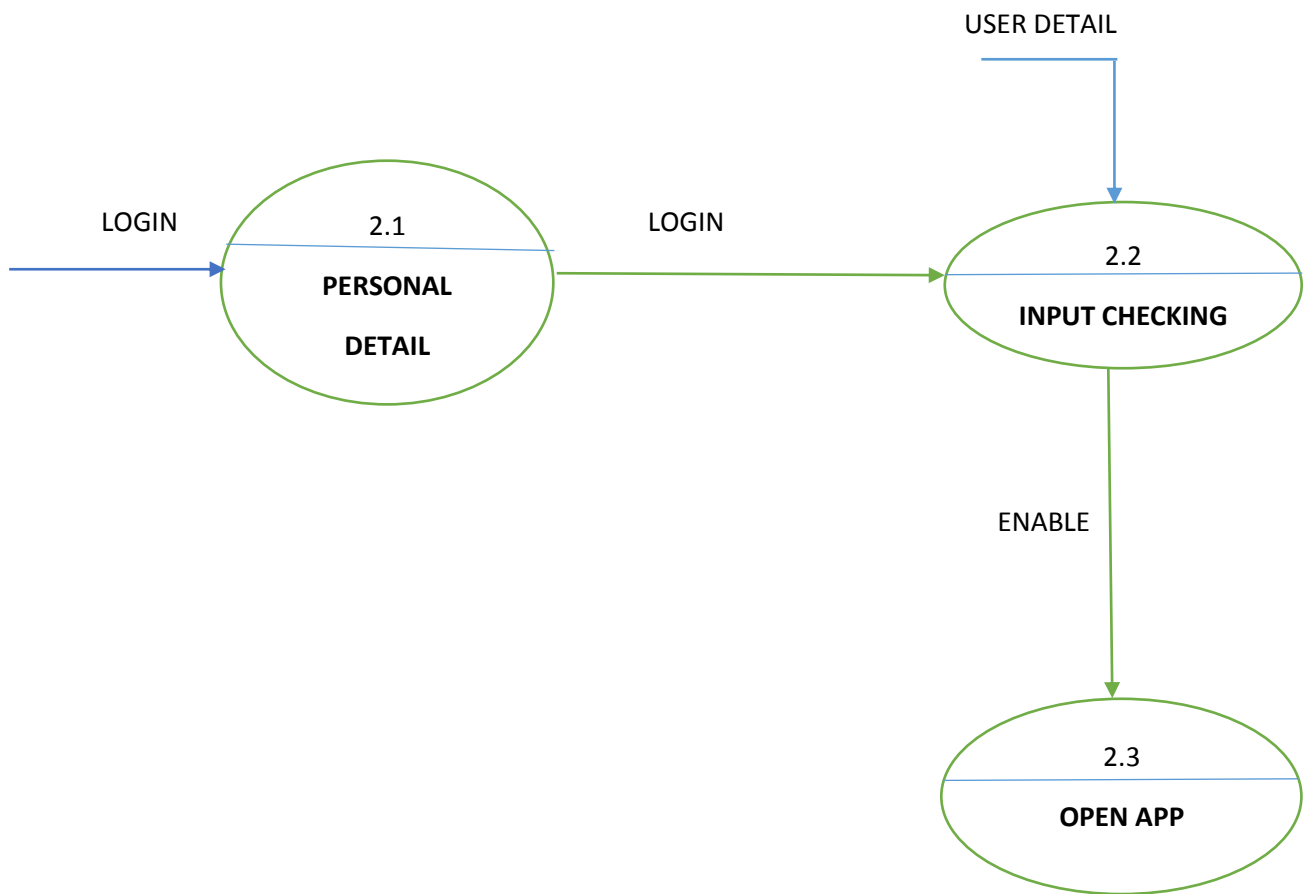
ADDITION TO DATA DICTIONARY

- **ENABLE :** [string] Data which enables login into app.

3) FACE MOVEMENT

FACE DETECTED DATA

```
        3.1
     INTERPRET
```

NO FACE

```
   3.2                 NO. FACE MOVEMENTS        3.2
 FREQUENCY                                      UPDATE
                                               COUNT F N D
```

COUNT FACE

NOT DETECTED

- FUNC 3.1 **INTERPRET** : This function interprets detected data and sends NO FACE
  signal.
- FUNC 3.2 **FREQUENCY :** Function to keep track of frequency of "no face detection"
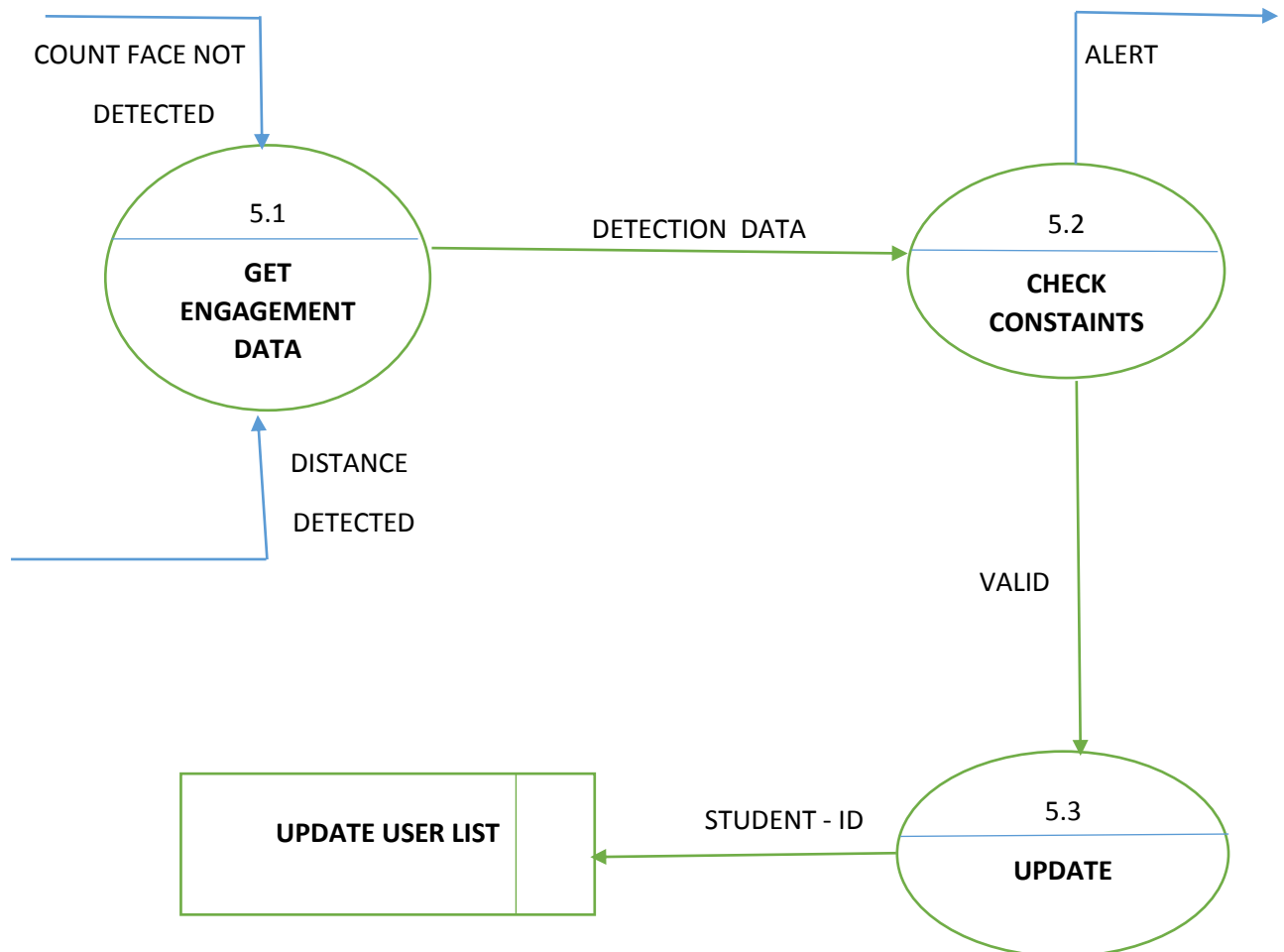 every 2 minute duration

ADDITION TO DATA DICTIONARY

- **NO FACE**   : [boolean] Boolean data , in which TRUE means face not
  detected.
- **NO. FACE MOVEMENT :** [integer] Data for no of times face not detected in a
  duration of 2mins.

4) FACE DISTANCE

This function just returns distance [integer] of face from mobile screen using proximity
sensor. No sub functions.

5) STUDENT ACTIVITY

- FUNC 5.2 **CHECK CONSTRAINTS** : This function checks constraints over face distance and no. of face movements of student.

- FUNC 5.3 **UPDATE**   : This function updates the attribute "not-engaged" of Students in user-list database.

ADDITION TO DATA DICTIONARY

- **DETECTED DATA** : [count face not detected + distance] The detected data of face distance and face movements(in last 2 min duration).

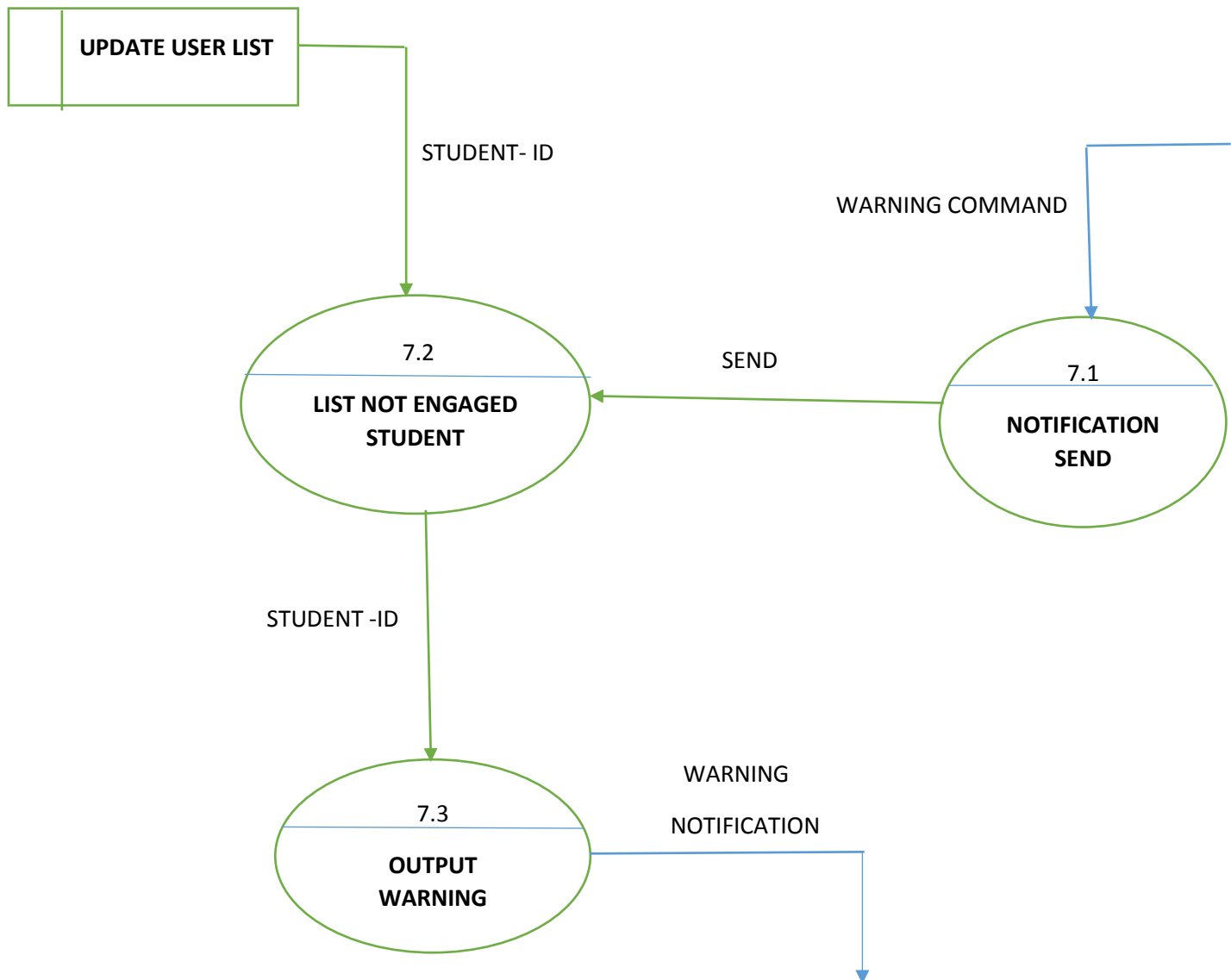- **VALID**   : [boolean] Boolean data , TRUE is student not engaged.

6) COUNT STUDENTS
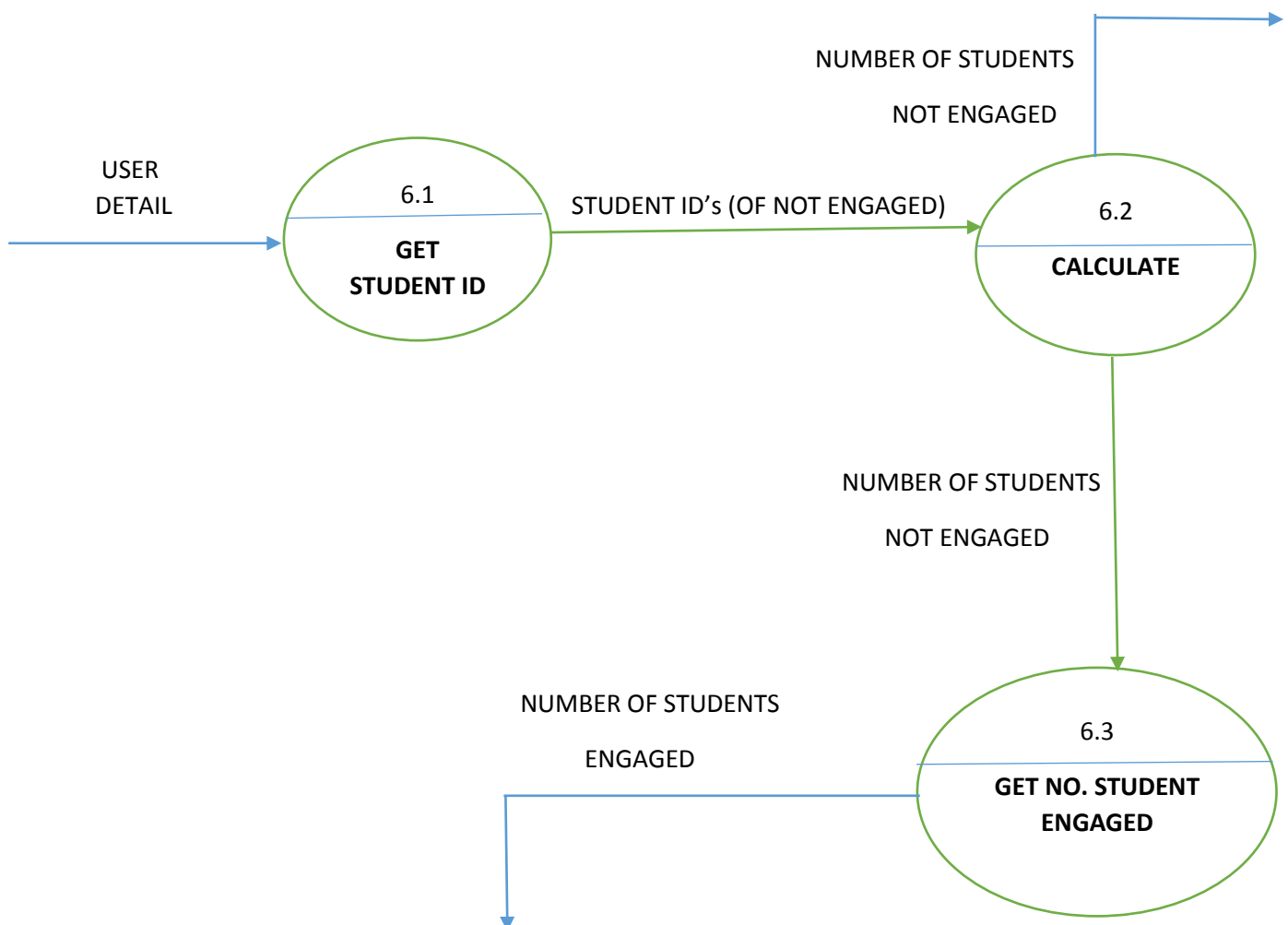
ADDITION TO DATA DICTIONARY

- **NUMBER OF STUDENTS NOT ENGAGED :** [integer]
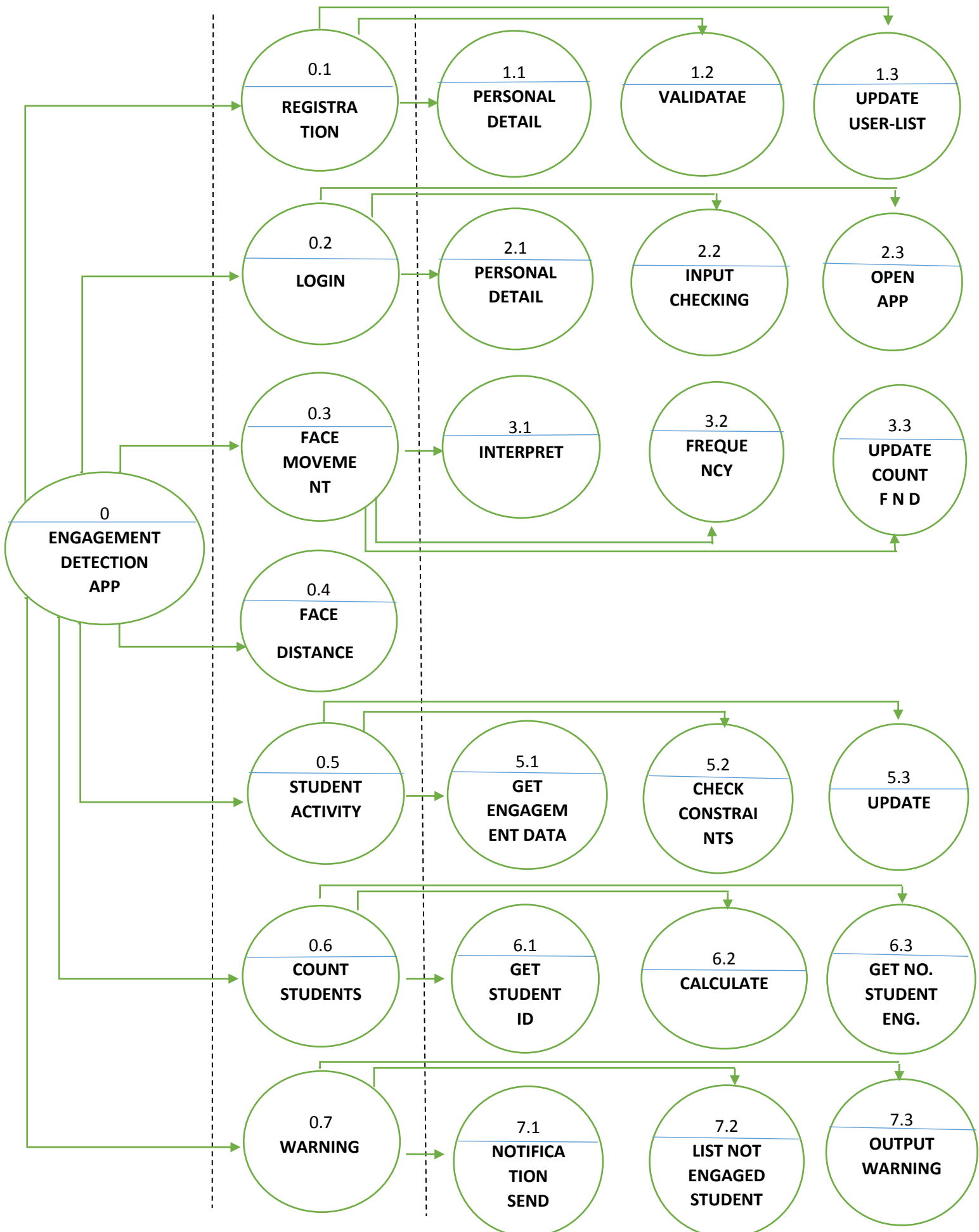- **NUMBER OF STUDENTS ENGAGED :** [integer]

7) WARNING

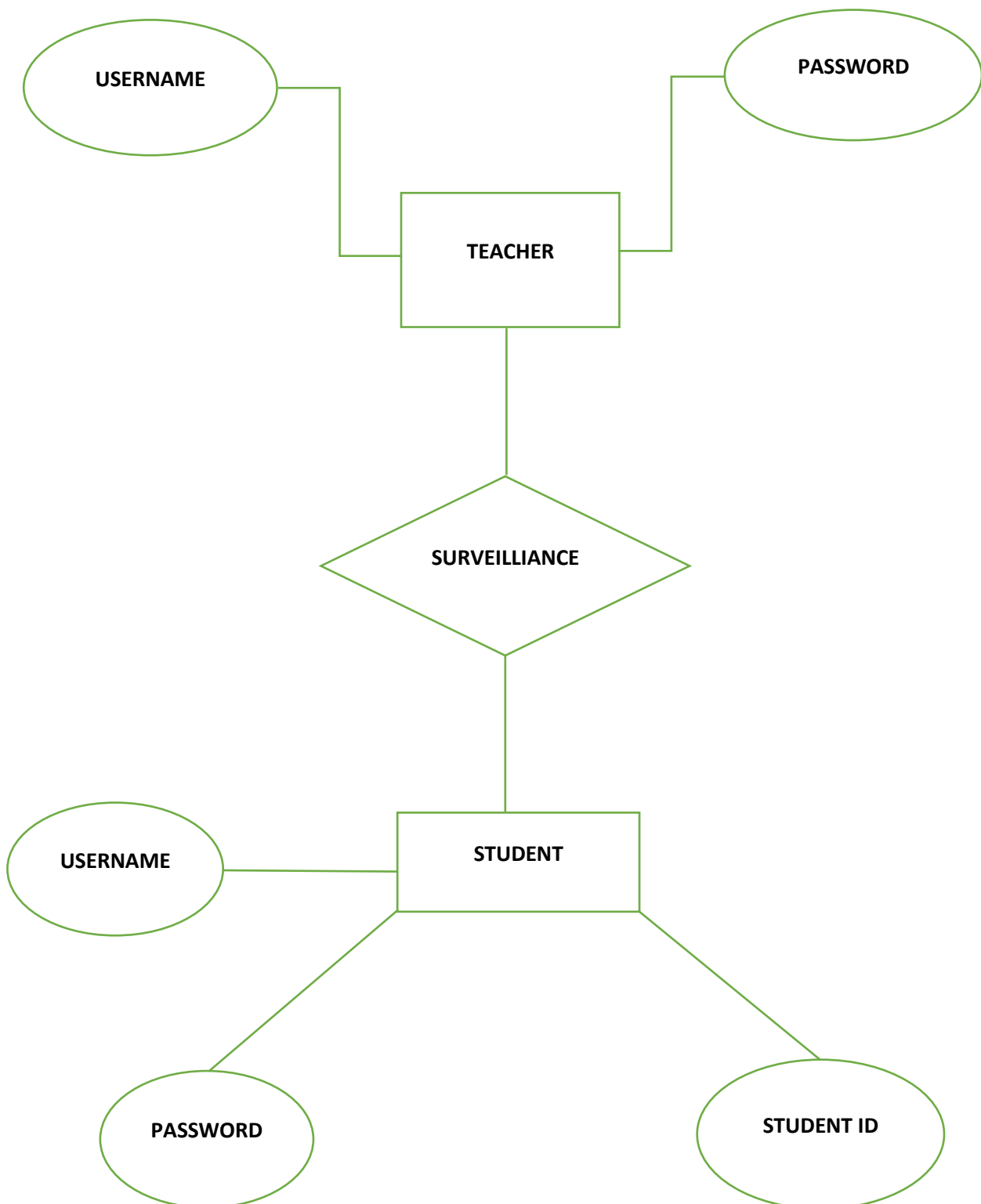## ADDITION TO DATA DICTIONARY

- **SEND** : [integer] Signal to send warning noti. to each student.

PROCESS DECOMPOSITION DIAGRAM

ER DIAGRAM

1) For **USER LIST** database - :

2) For **UPDATE USER LIST** database - :

STUDENT

STUDENT ID

NOT ENGAGED

(BOOLEAN)