Republic of the Philippines
BOHOL ISLAND STATE UNIVERSITY
Calape, Bohol
Calape Campus

COLLEGE OF TECHNOLOGY AND ALLIED SCIENCES
Information and Communication Technology Department

Final Project
In
Application Development and Emerging Technology

# Attendance Monitoring System using Java Application and Arduino RFID

KETH DOMINIC TACATANI
RICKY ARANAS
EDWIN POVADORA JR.
JHUN VRIEL MALIGRO
MARGIE MALUBAY
JOVELYN GENISTON

**June 2023**

## I. PROJECT DESCRIPTION

The Attendance Monitoring System is designed to streamline the attendance tracking process, eliminating the need for manual recording and reducing human errors. The system employs RFID technology to identify and authenticate individuals, while a Java application serves as the central control and data management interface. The Attendance Monitoring System using Java Application and Arduino RFID is a project aimed at automating and improving the process of recording attendance in educational institutions or workplaces. This system combines the power of a Java-based application with Arduino microcontrollers and RFID technology to accurately and efficiently monitor and track attendance.

## II. FEATURES

- **Mobile/Remote Access:** The system can be used anywhere and outside the campus.
- **Multiple Database Connectivity:** The system can connect to different MySQL databases.
- **Attendance Record View:** The system allows viewing of the recent and past attendance records.
- **Database Security:** The system's database is protected and ensures data security.
- **Event Creation for Attendance:** The system can create different events for attendance tracking.
- **Attendance Resumption:** The system allows users to resume attendance tracking.
- **Fast Attendance Processing:** The system operates efficiently and quickly during attendance tracking.
- **View and Search Records:** The system enables easy viewing and searching of attendance records.

## III. SYSTEM PROCESSES

**System Initialization**:

- The Java application and Arduino Uno pboard are initialized.
- The Java application establishes a serial connection with the Arduino board using JSerrialComm library to communicate with each other

**Student Registration:**

- The Java application provides a user registration interface.
- The administrator enters the details of individuals (students/employees) such as name, ID, and other relevant information.
- The Java application stores the user profiles in the database, along with their unique RFID tag IDs.

**Attendance Recording:**

- Individuals carry RFID tags assigned to them.
- When an individual approaches the RFID reader, they present their RFID tag.

- The RFID reader scans the tag and retrieves the unique identification information.
- The Arduino board receives the RFID data from the reader.

**Data Verification:**

- The Arduino board sends the obtained RFID data to the Java application via the established serial connection.
- The Java application receives the RFID data and compares it with the database records.
- If a match is found, the Java application verifies the attendance and proceeds to the next step.

**Attendance Update:**

- The Java application updates the attendance records in the database for the identified individual.
- The attendance status (present/absent) and the corresponding date and time are recorded.

**Real-time Display:**

- The Java application dynamically updates the user interface to display real-time attendance information.
- The interface shows the number of individuals present and their names.

**Attendance Reports:**

- The Java application provides options to generate attendance reports.
- Users can select specific dates, individuals, or groups to generate customized reports.
- The Java application retrieves the relevant data from the database and generates the attendance reports.
-

**Student Import/Export**

- This is a useful feature in the system especially when using two desktops. Desktop 1 can copy student list from the Main Desktop and can now perform and attendance.
- Student export is the opposite, when in need of student lists, this can be done so that a desktop can have copy.

**Overwrite Student**

- When tow lists are different, the system will need an approval from the admin if, changes to the list will be approved or not.

**Custom Event Creation**

- The application can create custom events that can be modified from who will be the students involved, when will be the time in and time out options.

**View Past Event Records**

- The application can view past events that took place.

**Event Edit, Delete Resume**

- The application can edit events that can be modified from who will be the students involved, when will be the time in and time out options.
- The application can also resume an event given that the event is the same date as the current date.

**Event Import/Export**

- The application has the function to export and event that can be saved csv. This is an important feature in the system because the school authorities can have a copy the attendance of a given event.
- It has also an import feature that imports and event that was exported from different desktop.

**Event Overwrite Creation**

- Overwriting an event is a feature of the system. For instance, two events are being held at different location, when the event is done, the event can be joined overwritten so that it can maintain a single copy that event.

**System Reset:**

- The system have a restart function button at the Main Panel sreen above the table that refreshes the Database connection as well the RFID Scanner connection.

**Connection Type**

- The system has feature for database connection types
  -Main Database Connection
  When connected to main database like in within the school premises, the system can connect wirelessly and setup the connection in the settings.
  -Local Connection
  On times where an event is held outside the campus, the system can connect through local database, given that the xampp server and database is setup properly.
  Note: An admin must get a copy of students list from the main database and import is to the desktop being used for attendance.

**System Security:**

- For security purposes for the main database, it be must setup with a password when accessing so that no other students can change and manipulate the records. There is a login prompt when using the main database.

## IV. PREVIEWS

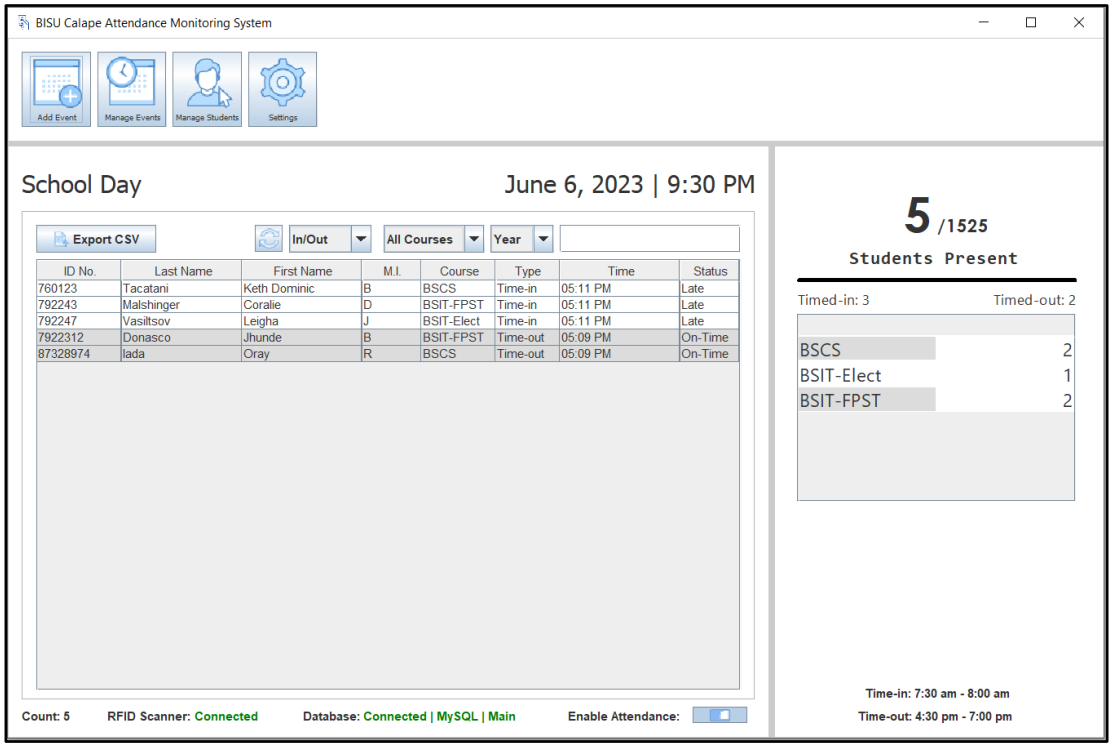



Figure 1. Main Panel

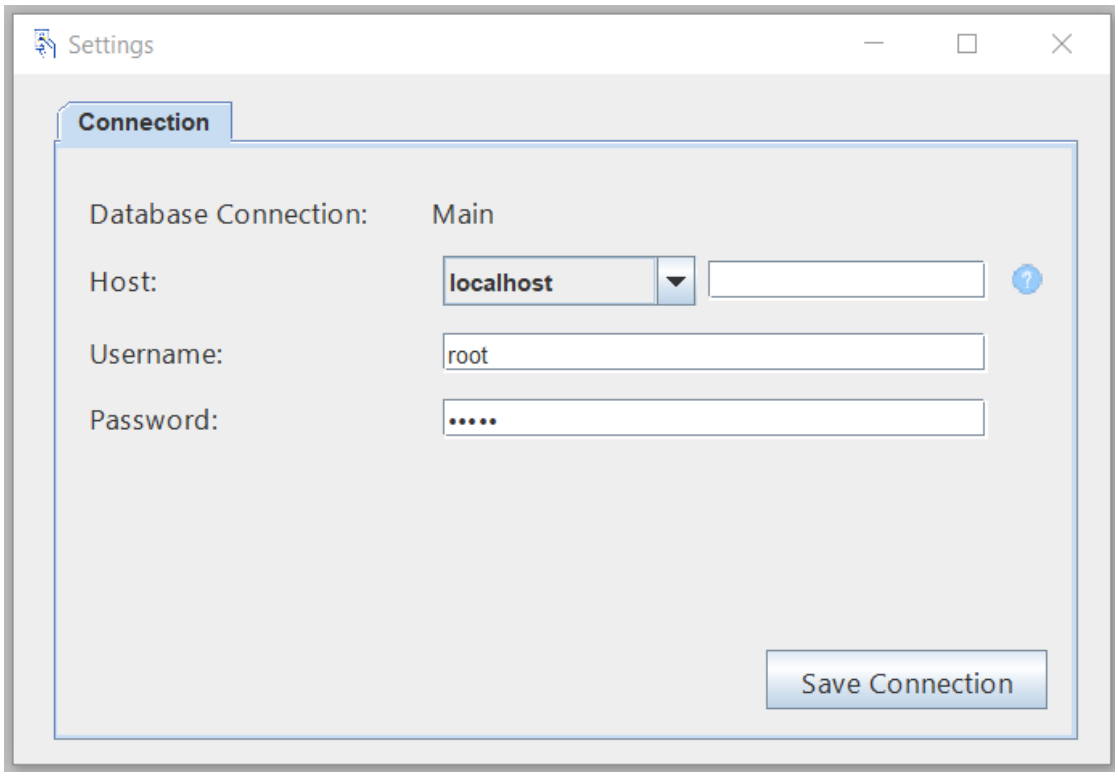
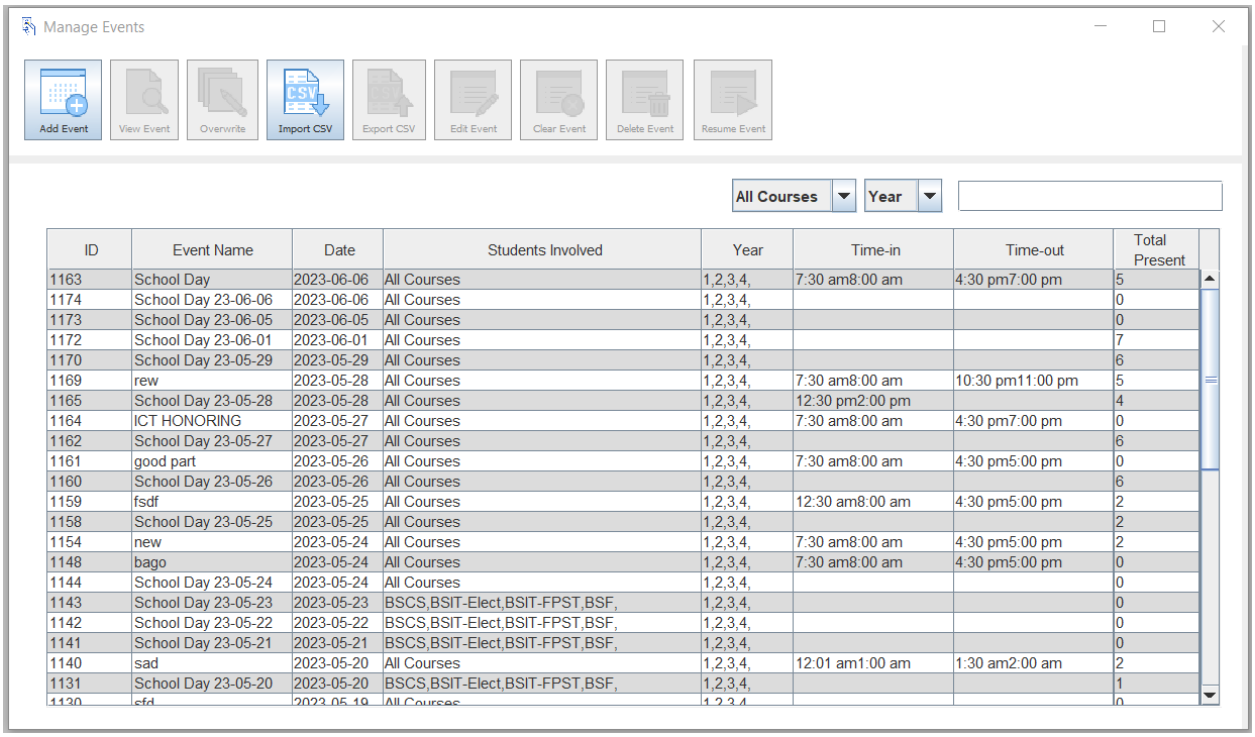



Figure 2. Settings Panel




| ID | Event Name | Date | Students Involved | Year | Time-in | Time-out | Total Present |
|---|---|---|---|---|---|---|---|
| 1163 | School Day | 2023-06-06 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 4:30 pm7:00 pm | 5 |
| 1174 | School Day 23-06-06 | 2023-06-06 | All Courses | 1,2,3,4, | | | 0 |
| 1173 | School Day 23-06-05 | 2023-06-05 | All Courses | 1,2,3,4, | | | 0 |
| 1172 | School Day 23-06-01 | 2023-06-01 | All Courses | 1,2,3,4, | | | 7 |
| 1170 | School Day 23-05-29 | 2023-05-29 | All Courses | 1,2,3,4, | | | 6 |
| 1169 | rew | 2023-05-28 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 10:30 pm11:00 pm | 5 |
| 1165 | School Day 23-05-28 | 2023-05-28 | All Courses | 1,2,3,4, | 12:30 pm2:00 pm | | 4 |
| 1164 | ICT HONORING | 2023-05-27 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 4:30 pm7:00 pm | 0 |
| 1162 | School Day 23-05-27 | 2023-05-27 | All Courses | 1,2,3,4, | | | 6 |
| 1161 | good part | 2023-05-26 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 4:30 pm5:00 pm | 0 |
| 1160 | School Day 23-05-26 | 2023-05-26 | All Courses | 1,2,3,4, | | | 6 |
| 1159 | fsdf | 2023-05-25 | All Courses | 1,2,3,4, | 12:30 am8:00 am | 4:30 pm5:00 pm | 2 |
| 1158 | School Day 23-05-25 | 2023-05-25 | All Courses | 1,2,3,4, | | | 2 |
| 1154 | new | 2023-05-24 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 4:30 pm5:00 pm | 2 |
| 1148 | bago | 2023-05-24 | All Courses | 1,2,3,4, | 7:30 am8:00 am | 4:30 pm5:00 pm | 0 |
| 1144 | School Day 23-05-24 | 2023-05-24 | All Courses | 1,2,3,4, | | | 0 |
| 1143 | School Day 23-05-23 | 2023-05-23 | BSCS,BSIT-Elect,BSIT-FPST,BSF, | 1,2,3,4, | | | 0 |
| 1142 | School Day 23-05-22 | 2023-05-22 | BSCS,BSIT-Elect,BSIT-FPST,BSF, | 1,2,3,4, | | | 0 |
| 1141 | School Day 23-05-21 | 2023-05-21 | BSCS,BSIT-Elect,BSIT-FPST,BSF, | 1,2,3,4, | | | 0 |
| 1140 | sad | 2023-05-20 | All Courses | 1,2,3,4, | 12:01 am1:00 am | 1:30 am2:00 am | 2 |
| 1131 | School Day 23-05-20 | 2023-05-20 | BSCS,BSIT-Elect,BSIT-FPST,BSF, | 1,2,3,4, | | | 1 |
| 1130 | sfd | 2023-05-19 | All Courses | 1,2,3,4 | | | 0 |

Figure 3. Manage Events Panel

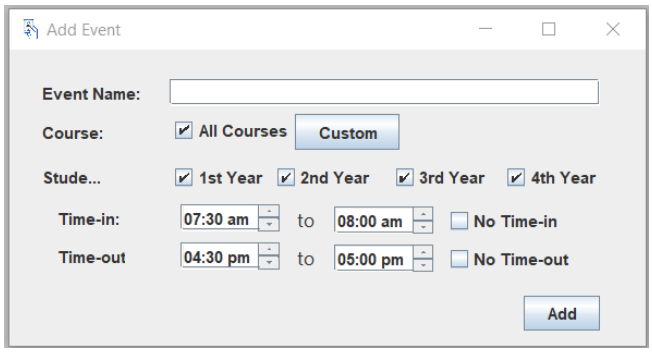



Figure 3.1. Add Event Panel

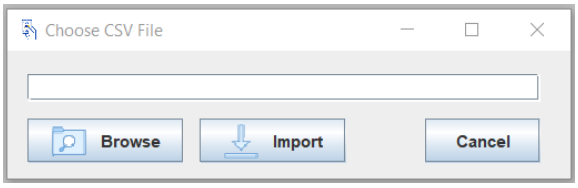
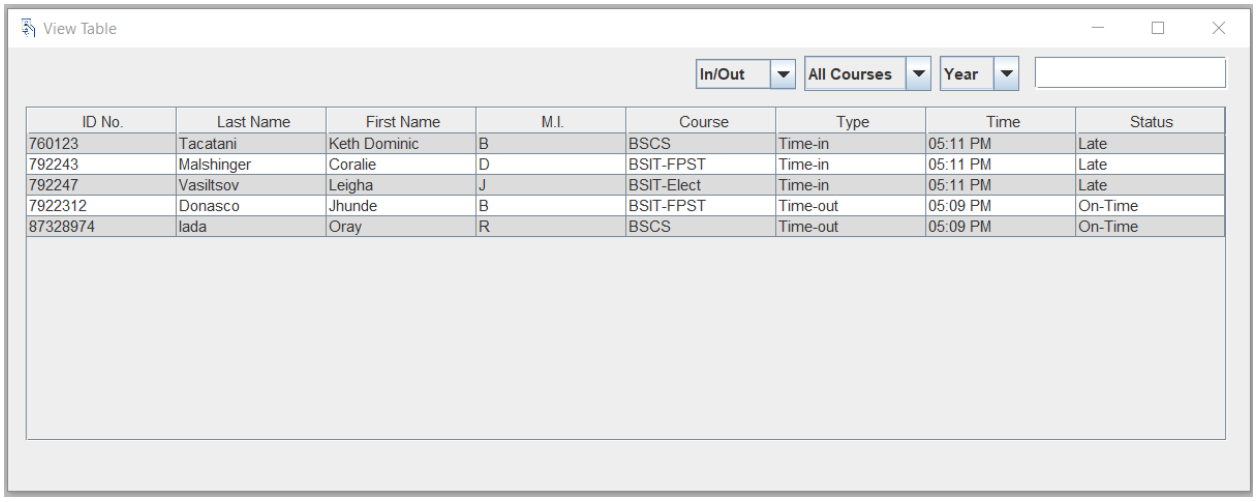
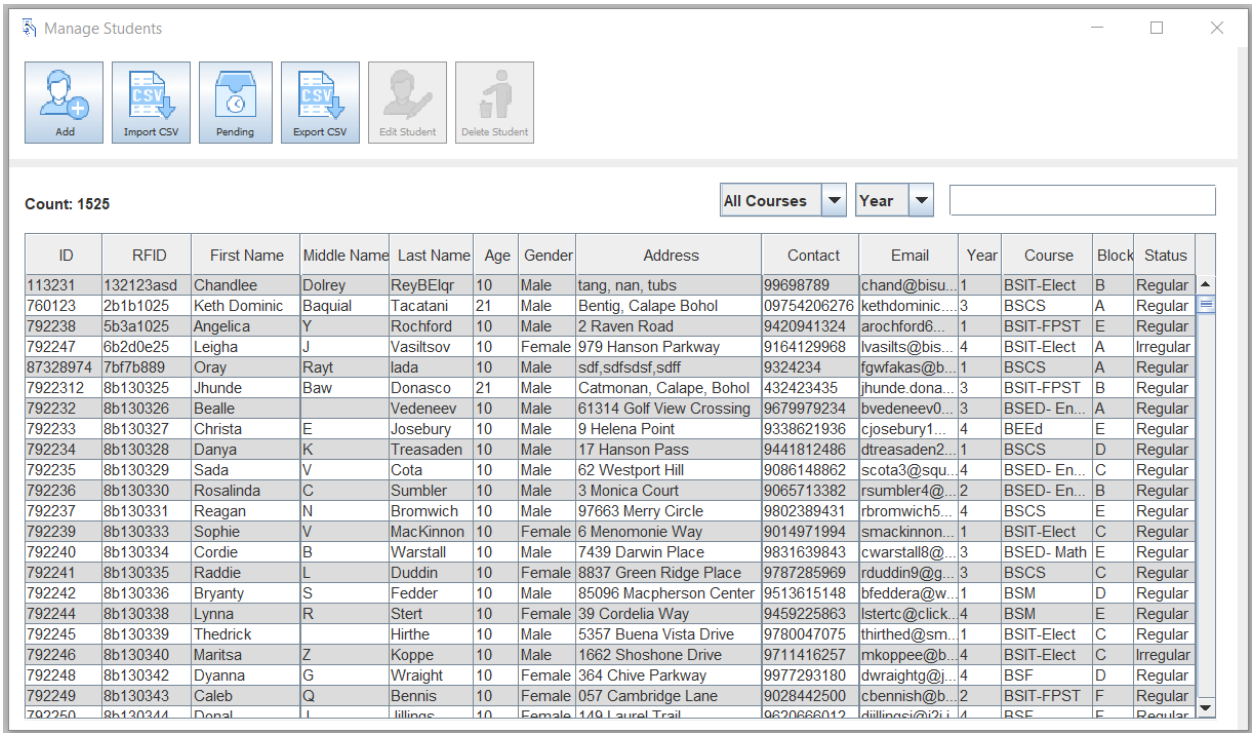



Figure 3.2. Import CSV Panel




| ID No. | Last Name | First Name | M.I. | Course | Type | Time | Status |
|---|---|---|---|---|---|---|---|
| 760123 | Tacatani | Keth Dominic | B | BSCS | Time-in | 05:11 PM | Late |
| 792243 | Malshinger | Coralie | D | BSIT-FPST | Time-in | 05:11 PM | Late |
| 792247 | Vasiltsov | Leigha | J | BSIT-Elect | Time-in | 05:11 PM | Late |
| 7922312 | Donasco | Jhunde | B | BSIT-FPST | Time-out | 05:09 PM | On-Time |
| 87328974 | lada | Oray | R | BSCS | Time-out | 05:09 PM | On-Time |

Figure 3.3. View Event Panel




| ID | RFID | First Name | Middle Name | Last Name | Age | Gender | Address | Contact | Email | Year | Course | Block | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 113231 | 132123asd | Chandlee | Dolrey | ReyBElqr | 10 | Male | tang, nan, tubs | 99698789 | chand@bisu... | 1 | BSIT-Elect | B | Regular |
| 760123 | 2b1b1025 | Keth Dominic | Baquial | Tacatani | 21 | Male | Bentig, Calape Bohol | 09754206276 | kethdominic.... | 3 | BSCS | A | Regular |
| 792238 | 5b3a1025 | Angelica | Y | Rochford | 10 | Male | 2 Raven Road | 9420941324 | arochford6... | 1 | BSIT-FPST | E | Regular |
| 792247 | 6b2d0e25 | Leigha | J | Vasiltsov | 10 | Female | 979 Hanson Parkway | 9164129968 | lvasilts@bis... | 4 | BSIT-Elect | A | Irregular |
| 87328974 | 7bf7b889 | Oray | Rayt | lada | 10 | Male | sdf,sdfsdsf,sdff | 9324234 | fgwfakas@b... | 1 | BSCS | A | Regular |
| 7922312 | 8b130325 | Jhunde | Baw | Donasco | 21 | Male | Catmonan, Calape, Bohol | 432423435 | jhunde.dona... | 3 | BSIT-FPST | B | Regular |
| 792232 | 8b130326 | Bealle | | Vedeneev | 10 | Male | 61314 Golf View Crossing | 9679979234 | bvedeneev0... | 3 | BSED- En... | A | Regular |
| 792233 | 8b130327 | Christa | E | Josebury | 10 | Male | 9 Helena Point | 9338621936 | cjosebury1... | 4 | BEEd | E | Regular |
| 792234 | 8b130328 | Danya | K | Treasaden | 10 | Male | 17 Hanson Pass | 9441812486 | dtreasaden2... | 1 | BSCS | D | Regular |
| 792235 | 8b130329 | Sada | V | Cota | 10 | Male | 62 Westport Hill | 9086148862 | scota3@squ... | 4 | BSED- En... | C | Regular |
| 792236 | 8b130330 | Rosalinda | C | Sumbler | 10 | Male | 3 Monica Court | 9065713382 | rsumbler4@... | 2 | BSED- En... | B | Regular |
| 792237 | 8b130331 | Reagan | N | Bromwich | 10 | Male | 97663 Merry Circle | 9802389431 | rbromwich5... | 4 | BSCS | E | Regular |
| 792239 | 8b130333 | Sophie | V | MacKinnon | 10 | Female | 6 Menomonie Way | 9014971994 | smackinnon... | 1 | BSIT-Elect | C | Regular |
| 792240 | 8b130334 | Cordie | B | Warstall | 10 | Male | 7439 Darwin Place | 9831639843 | cwarstall8@... | 3 | BSED- Math | E | Regular |
| 792241 | 8b130335 | Raddie | L | Duddin | 10 | Female | 8837 Green Ridge Place | 9787285969 | rduddin9@g... | 3 | BSCS | C | Regular |
| 792242 | 8b130336 | Bryanty | S | Fedder | 10 | Male | 85096 Macpherson Center | 9513615148 | bfeddera@w... | 1 | BSM | D | Regular |
| 792244 | 8b130338 | Lynna | R | Stert | 10 | Female | 39 Cordelia Way | 9459225863 | lstertc@click... | 4 | BSM | E | Regular |
| 792245 | 8b130339 | Thedrick | | Hirthe | 10 | Male | 5357 Buena Vista Drive | 9780047075 | thirthed@sm... | 1 | BSIT-Elect | C | Regular |
| 792246 | 8b130340 | Maritsa | Z | Koppe | 10 | Male | 1662 Shoshone Drive | 9711416257 | mkoppee@b... | 4 | BSIT-Elect | C | Irregular |
| 792248 | 8b130342 | Dyanna | G | Wraight | 10 | Female | 364 Chive Parkway | 9977293180 | dwraightg@j... | 4 | BSF | D | Regular |
| 792249 | 8b130343 | Caleb | Q | Bennis | 10 | Female | 057 Cambridge Lane | 9028442500 | cbennish@b... | 2 | BSIT-FPST | F | Regular |
| 792250 | 8b130344 | Donal | L | Jillings | 10 | Female | 149 Laurel Trail | 9620666012 | djillingsi@i2i.j... | 4 | BSF | F | Regular |

Figure 4. Manage Students Panel

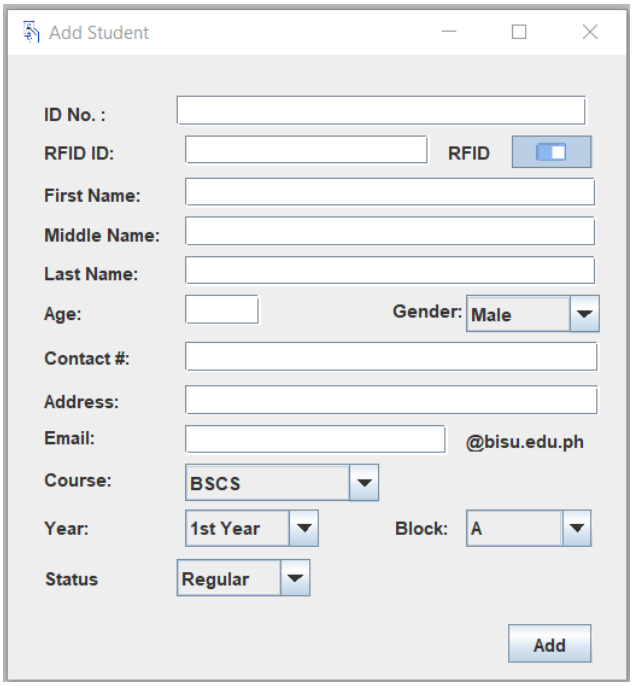



Figure 4.1. Add/Edit Student Panel

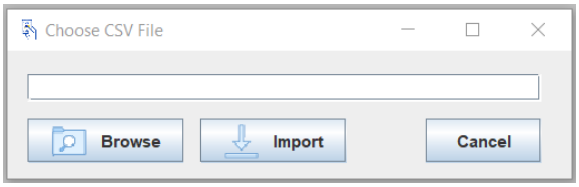



Figure 3.2. Import CSV Panel

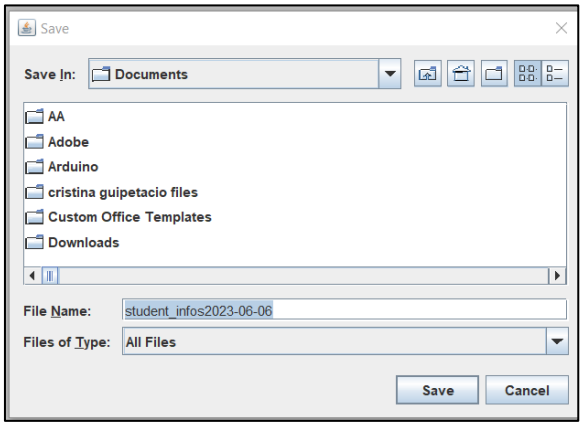



Figure 4.2. Export CSV Panel

## V. APPLICATION SOFTWARE

## VI. CURRICULUM VITAE

First name: Keth Dominic

Last name: Tacatani

Middle name: Baquial

Gender: Male

Address: Purok 5, Bentig, Calape, Bohol

**EDUCATIONAL BACKGROUND:**

**Primary Level**

Bentig-Calunasan, Elementary school

Calunasan, Calape, Bohol

S.Y. 2013-2014

**Junior High School**

Mayor Anunciacion R. Tuazon National School of Fisheries

Calunasan, Calape, Bohol

S.Y. 2014-2018

**Senior High School**

Mayor Anunciacion R. Tuazon National School of fisheries

Calunasan, Calape, Bohol

S.Y. 2019-2020

**Name :** Jhun Vriel Maligro

**Date of Birth:** April 14, 2002
**Place of Birth :** Obujan ,Antequera, Bohol
**Age :** 21
**Sex :** Male
**Religion :** Roman Catholic
**Civil Status :** Single
**Citizenship :** Filipino
**Height :** 5'3
**Weight :** 58
**Language Spoken :** Cebuano, Tagalog, English
**Parents :** Alma D. Maligro
Arniel D. Maligro

## EDUCATIONAL BACKGROUND

Primary **:** Obujan Taguba-as Elementary School
Obujan, Antequera, Bohol
2008-2014

Secondary **: Junior High School**
Canlaas High School
Canlaas, Antequera, Bohol
2017-2018
: **Senior High School**
Gov. Jacinto Borja National High School
Cantaongon, Loon, Bohol
2019-2020

Tertiary **: Bachelor of Science in Computer Science**
Bohol Island State University- Calape Campus
San Isidro, Calape, Bohol
2023-2024

First name: Ricky

Last name: Aranas

Middle name: Abelong

Gender: Male

Address: Macaas, Tubigon, Bohol

**Educational Background:**

Elementary

Macaas, Elementary, School

Macaas, Tubigon, Bohol

S.Y. 2013-2014

Secondary Junior High School

Holy Cross Academy

Pooc Oriental, Tubigon, Bohol

S.Y. 2017-2018

Secondary Senior High School

Holy Cross Academy

Pooc Oriental, Tubigon, Bohol

S.Y. 2019-2020

First name: Edwin Jr.

Last name: Povadora

Middle name: Abarquez

Gender: Male

Address: Macaas, Tubigon, Bohol

**Educational Background:**

Elementary

Macaas, Elementary, School

Macaas, Tubigon, Bohol

S.Y.2012-2013

Secondary Junior High School

Holy Cross Academy

Pooc Oriental, Tubigon,Bohol

S.Y. 2016-2017

Secondary Senior High School

Holy Cross Academy

Pooc Oriental, Tubigon,Bohol

S.Y. 2019-2020

Full Name: Jovelyn O. Geniston
Address: Pig-ot, Loon, Bohol
Birth Date: April 16, 2002
Birth Place: Pig-ot, Loon, Bohol
Height: 158 cm
Weight: 32 kg
Sex: Female
Nationality: Filipino
Religion: Roman Catholic
Civil Status: Single
Parents: Jovencia O. Geniston
Ariel L. Geniston

Educational Background:

Tertiary: Bachelor of Science in Computer Science
Bohol Island State University-Calape Campus
San Isidro, Calape, Bohol

Secondary: University of Bohol - Loon Institute
Moto Norte, Loon, Bohol

Elementary: Pig-ot Elementary School
Pig-ot, Loon, Bohol

**Name** : Margie A. Malubay

**Address** : Liboron, Calape, Bohol

**Birth Date** : March 28, 2002

**Birth Place** : Molopolo, Liloan, Southern Leyte

**Height** : 4’11

**Weight** : 40 kg

**Sex** : Female

**Nationality** : Filipino

**Religion** : Roman Catholic

**Civil Status** : Single

**Parents** : Angelie A. Malubay

Romeo M. Malubay

**Educational Background:**

**Tertiary:** Bachelor of Science in Computer Science

Bohol Island State University

San Isidro, Calape, Bohol

**Secondary:** Calape National High, School

Sta Cruz, Calape Bohol

**Elementary:** Tultugan Elementary School

Tultugan, Calape Bohol