FEU Institute of Technology

Department of Information Technology

IT0011: INTEGRATIVE PROGRAMMING AND TECHNOLOGIES

SECTION

Final Project

Grade

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I. INTRODUCTION

The User Registration Program is a Python-based application designed to streamline user management through its several features allowing users to sign up, view registered records, and search a specific record. This program offers a user-friendly interface and simple yet effective user management through a graphical user interface (GUI) built with Tkinter. It also features data persistence using file handling operations through CSV files that stores, displays, and retrieves user information together with error-trapping mechanisms for error handling and input validations to ensure proper data format and enhance structure, flow, and efficiency of the system. In addition, other concepts under the Python programming language were also incorporated to implement a lightweight and efficient user registration system. This program can also be used in different fields in the workplace with related user management needs, such as for student enrollment systems, employee records, customer registrations, and small business operations. Overall, this system was created to improve the understanding of how useful the Python programming language is in solving and offering effective solutions to real-world problems.

II. OBJECTIVES

The objective of our User Registration System is to provide a seamless and easy way to store information for its users. Structured with create, read, and search functionality, the program can handle the basic functionalities required by the system such as:

- Creating records of each unique user.
- Displaying the information of all persons registered in the system.
- Manually searching for a specific record by simply typing in their last name.
- Arrange the records by last name in alphabetical order to offer optimal organization.
- Update a record's registered information.
- Saved into a separate file automatically.
- Remove specific records from the file.

By integrating past key concepts, the team have successfully created such a system. By using GUI, the system came alive from a simple console into an interactive interface that encourages fun and optimism from our users.

III. PROGRAM SCREEN SHOTS

Capture the program window for each process that has been taken. Write some description about the captured screen.

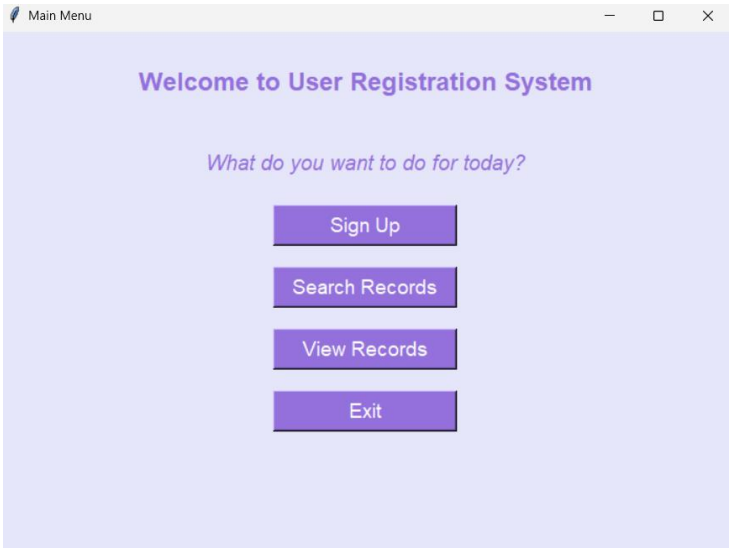
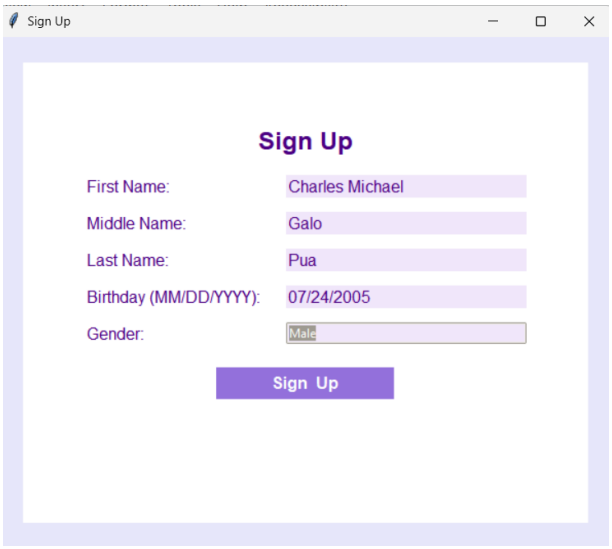
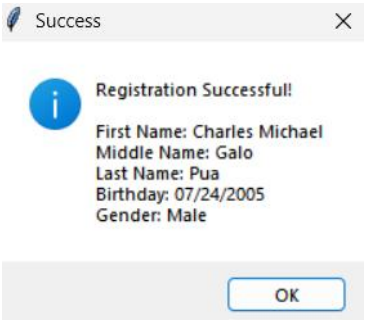


Figure 1. Main Program

Figure 1 shows the Main Menu of the program consisting tabs for the functions: Sign Up, Search Records, View Records, and Exit respectively.





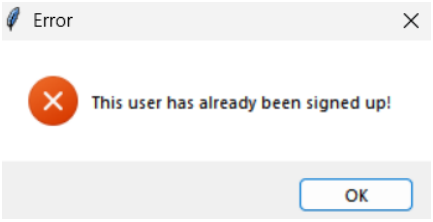


Figure 2. Sign Up

Figure 2 shows the Sign Up page of the program. It prompts the user a form with the following fields: first, middle, and last name, birthday, and gender. Once done, a message window shows that the registration has been successful. Otherwise, an error message pops up when a duplicate input is detected

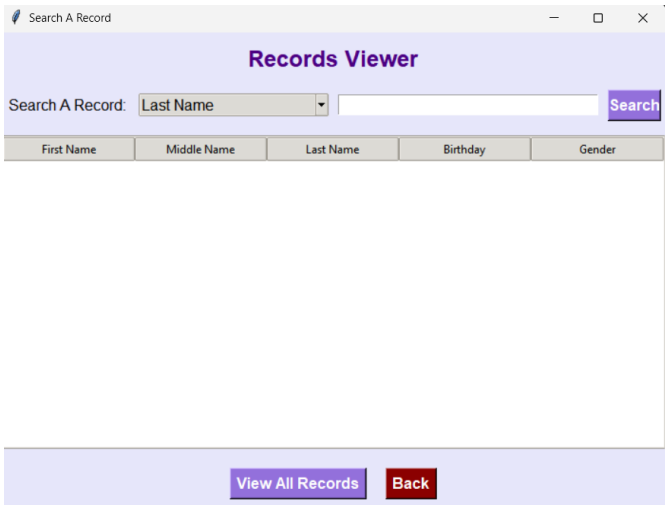


Figure 3. Records Viewer

Figure 2 shows the Records Viewer page of the program. The user can either search a record by first name. middle name, last name, or simply view all records.

Figure 3.1 Records Viewer - Search by First Name

Figure 3.1 shows the function of searching a record by first name.

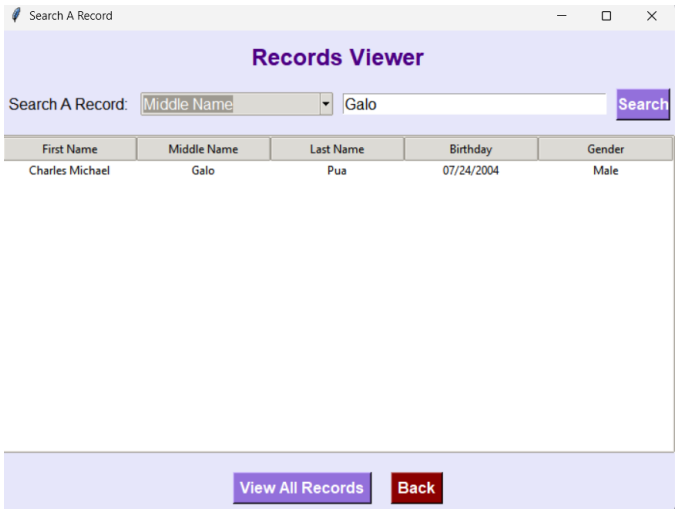


Figure 3.2 Records Viewer - Search by Middle Name

Figure 3.1 shows the function of searching a record by first name.

Figure 3.3 Records Viewer - Search by Last Name

Figure 3.2 shows the function of searching a record by last name.

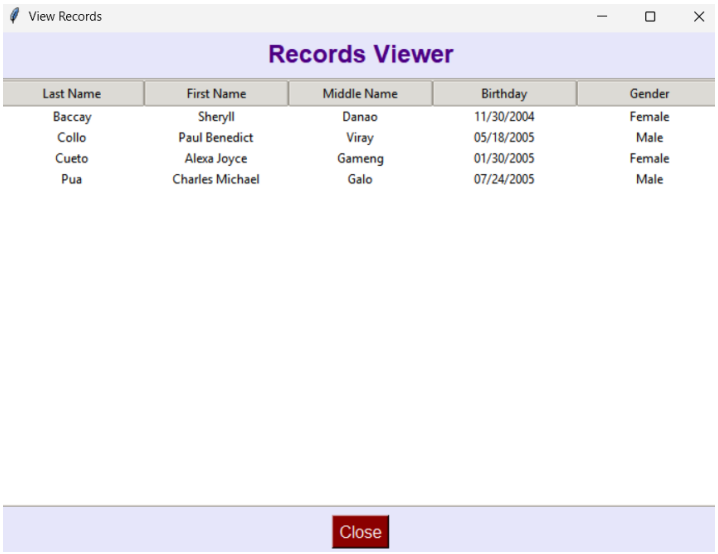


Figure 4. View Records

Figure 4 shows the function of "View All Records".

IV. SOURCE CODE

#main.py

```
import tkinter as tk #gui
from signUp import signUpWindow #signUp.py
from searchRecord import searchRecordWindow #searchRecord.py
from viewRecord import viewRecordWindow #viewRecord.py

def main_menu():
    root = tk.Tk()
    root.title("Main Menu")
    root.geometry("700x500")#gemoetry
    root.configure(bg="#e6e6fa")

     tk.Label(root, text="Welcome to User Registration System",
     font=("Roboto", 18, 'bold'), bg="#e6e6fa", fg="#9370DB").pack(pady=30)

     tk.Label(root, text="What do you want to do for today?", font =
     ("Roboto", 15, 'italic'), bg="#e6e6fa", fg="#9370DB").pack(pady= 15)

     button_config = {"font": ("Roboto", 14), "bg": "#9370DB", "fg": "white",
     "width": 15, "height": 1}
```

```
     tk.Button(root, text="Sign Up", command=lambda: signUpWindow(root),
     **button_config).pack(pady=10)

     tk.Button(root, text="Search Records", command=lambda:
     searchRecordWindow(root), **button_config).pack(pady=10)

     tk.Button(root, text="View Records", command=lambda:
     viewRecordWindow(root), **button_config).pack(pady=10)
     tk.Button(root, text="Exit", command=root.quit,
     **button_config).pack(pady=10)

    root.mainloop()

if __name__ == "__main__":
    main_menu()
```

#signUp.py

```
import tkinter as tk #gui
from tkinter import messagebox, ttk
from datetime import datetime
import csv #file handling/data persistence
from fileHandler import saveRecords #csv file

def isUserExists(firstName, middleName, lastName):
    try:
        with open("records.csv", "r", newline="") as file:
            reader = csv.reader(file)
            for row in reader:
                if len(row) >= 3 and row[0] == firstName and row[1] ==
middleName and row[2] == lastName:
                    return True  #User already exists
    except FileNotFoundError:
        return False  #If file doesn't exist, no duplicates
    return False  #No match found

def signUpWindow(mainWindow):
    root = tk.Toplevel(mainWindow) #toplevel
    root.title("Sign Up")
    root.geometry("700x500")
    root.configure(bg='#e6e6fa')

    #Function to handle signup
    def signUp():
        firstName = firstNameEntry.get().strip()
        middleName = middleNameEntry.get().strip()
        lastName = lastNameEntry.get().strip()
        birthday = birthdayEntry.get().strip()
```

```
        gender = genderEntry.get().strip()

        if not firstName or not middleName or not lastName or not birthday or
not gender:
            messagebox.showerror("Error", "This field is required. Please
fill in required inputs.")
            return

        try:
            datetime.strptime(birthday, "%m/%d/%Y")
        except ValueError:
            messagebox.showerror("Error", "Birthday must be in the format of
MM/DD/YYYY.")
            return

        if gender not in ["Male", "Female", "Other"]:
            messagebox.showerror("Error", "Please input a valid gender.")
            return

        if isUserExists(firstName, middleName, lastName):
            messagebox.showerror("Error", "This user has already been signed
up!")
            return (signUpWindow)

        messagebox.showinfo("Success", f"Registration Successful!\n\nFirst
Name: {firstName}\nMiddle Name: {middleName}\nLast Name:
{lastName}\nBirthday: {birthday}\nGender: {gender}")

        saveRecords("records.csv", [firstName, middleName, lastName,
birthday, gender])

        root.destroy()  #Close the signup window after clicking signup
        mainWindow.deiconify()  #Bring back main menu

    #Function to update gender display with an upside-down arrow
    def update_gender_display(event=None):
        selected_gender = genderEntry.get()
        if selected_gender and selected_gender not in ["▼ Male", "▼ Female",
"▼ Other"]:
            genderEntry.set(selected_gender)

    #Function to remove arrow when clicked
    def remove_arrow(event=None):
        selected_gender = genderEntry.get().replace("▼ ", "")
        genderEntry.set(selected_gender)

    #Style for rounded corners
    style = ttk.Style(root)
    style.theme_use('clam')
```

```
    style.configure("RoundedFrame.TFrame", background='white', borderwidth=0,
relief='flat')
    style.configure("RoundedLabel.TLabel", background='white',
foreground='#4B0082', font=("Arial", 12))
    style.configure("RoundedEntry.TEntry", fieldbackground='#f0e6fa',
foreground='#4B0082', font=("Arial", 12), borderwidth=0,
highlightthickness=0)
    style.configure("RoundedButton.TButton", background='#9370DB',
foreground='white', font=("Arial", 12, 'bold'), borderwidth=0, relief='flat')

    #Function to create rounded frame
    def rounded_frame(parent, **kwargs):
        frame = ttk.Frame(parent, style="RoundedFrame.TFrame", **kwargs)
        return frame

    #Centering the frame (adjusted width)
    floatingFrame = rounded_frame(root, padding=30)
    floatingFrame.place(relx=0.5, rely=0.5, anchor="center", width=550,
height=450) #adjusted width

    #Frame to hold the form
    formFrame = rounded_frame(floatingFrame, padding=20)
    formFrame.pack(fill="both", expand=True)

    # itle Label
    ttk.Label(formFrame, text="Sign Up", style="RoundedLabel.TLabel",
font=("Roboto", 18, 'bold')).grid(row=0, column=0, columnspan=2, pady=10)

    #Form Labels and Entries
    labels = ["First Name:", "Middle Name:", "Last Name:", "Birthday
(MM/DD/YYYY):", "Gender:"]

    for i, label in enumerate(labels):
        ttk.Label(formFrame, text=label,
style="RoundedLabel.TLabel").grid(row=i + 1, column=0, sticky="w", pady=7,
padx=10) #Adjusted padx

    #Entry fields (adjusted width)
    entry_style = {"font": "Roboto 12", "bg": "#f0e6fa", "fg": "#4B0082",
"relief": "flat", "highlightthickness": 0, "width": 25} #adjusted entry width
    firstNameEntry = tk.Entry(formFrame, **entry_style)
    middleNameEntry = tk.Entry(formFrame, **entry_style)
    lastNameEntry = tk.Entry(formFrame, **entry_style)
    birthdayEntry = tk.Entry(formFrame, **entry_style)
    genderEntry = ttk.Combobox(formFrame, values=["Male", "Female", "Other"],
state="readonly", style="RoundedEntry.TEntry", width=25) #adjusted combobox
width
```

```
    entries = [firstNameEntry, middleNameEntry, lastNameEntry, birthdayEntry,
genderEntry]

    for i, entry in enumerate(entries):
        entry.grid(row=i + 1, column=1, sticky="ew", padx=10, pady=10)
#adjusted padx

    #Set default arrow display
    genderEntry.set("Select Gender")

    #Bind events to modify arrow behavior
    genderEntry.bind("<<ComboboxSelected>>", update_gender_display) # Add
arrow back after selection
    genderEntry.bind("<Button-1>", remove_arrow) # Remove arrow when clicked

    entries = [firstNameEntry, middleNameEntry, lastNameEntry, birthdayEntry,
genderEntry]
    for i, entry in enumerate(entries):
        entry.grid(row=i + 1, column=1, sticky="ew", padx=10, pady=5)
#adjusted padx

    #Submit Button

    ttk.Button(formFrame, text="            Sign  Up            ",
command=signUp, style="RoundedButton.TButton").grid(row=6, column=0,
columnspan=2, pady=15, sticky="")

    #Adjust column weights for responsiveness
    formFrame.columnconfigure(0, weight=2) #increased first column weight
    formFrame.columnconfigure(1, weight=3)

    mainWindow.mainloop()
```

#searchRecord.py

```
import tkinter as tk #gui
from tkinter import ttk, messagebox
from fileHandler import loadRecords #csv file
from viewRecord import viewRecordWindow

RECORDS_FILE = "records.csv"

def searchRecordWindow(mainWindow):
    #Creates the search record window.
    root = tk.Toplevel(mainWindow)
    root.title("Search A Record")
    root.geometry("700x500")
```

```
    root.configure(bg='#e6e6fa')

    def searchByName():
        #Search for a record and display results.
        searchCategory = searchType.get()
        searchValue = searchEntry.get().strip().lower()

        if not searchValue:
            messagebox.showerror("Error", "Search value cannot be empty.")
            root.destroy()  #Close window on error
            return

        records = loadRecords(RECORDS_FILE)
        if not records:
            messagebox.showinfo("No Records", "No records found in the
system.")
            root.destroy()  #Close window on error
            return

        if searchCategory == "First Name":
            results = [
                record for record in records
                if record.get("First Name",
"").strip().lower().startswith(searchValue)
            ]
        elif searchCategory == "Middle Name":
            results = [
                record for record in records
                if record.get("Middle Name",
"").strip().lower().startswith(searchValue)
            ]
        elif searchCategory == "Last Name":
            results = [
            record for record in records
            if record.get("Last Name",
"").strip().lower().startswith(searchValue)
        ]

        tree.delete(*tree.get_children())
        if results:
            for record in results:
                tree.insert("", "end", values=(record["First Name"],
record["Middle Name"], record["Last Name"], record["Birthday"],
record["Gender"]))
        else:
            messagebox.showinfo("No Record Found", "No matching record
found.")
            root.destroy()  #Close window on error
```

```
    def openViewRecords():
        """Open the view all records window."""
        viewRecordWindow(mainWindow)

    def goBack():
        """Return to the main menu."""
        root.destroy()  #Close search window

    #Title Label
    tk.Label(root, text="Records Viewer", font=("Roboto", 18, 'bold'),
bg='#e6e6fa', fg='#4B0082').pack(pady=10)

    #Search Frame
    searchFrame = tk.Frame(root, bg='#e6e6fa')
    searchFrame.pack(pady=5)

    tk.Label(searchFrame, text="Search A Record:", font=("Roboto", 12),
bg='#e6e6fa').pack(side=tk.LEFT, padx=5)

    #Dropdown to select search type (First Name or Last Name)
    searchType = ttk.Combobox(searchFrame, values=["First Name", "Middle
Name", "Last Name"], font=("Roboto", 12), state="readonly")
    searchType.set("Last Name")  # Default to Last Name
    searchType.pack(side=tk.LEFT, padx=5)

    searchEntry = tk.Entry(searchFrame, font=("Roboto", 12), width=30)
    searchEntry.pack(side=tk.LEFT, padx=5)

    tk.Button(searchFrame, text="Search", font=("Roboto", 12, 'bold'),
bg='#9370DB', fg='white', command=searchByName).pack(side=tk.LEFT, padx=5)

    #Treeview Frame
    treeFrame = tk.Frame(root)
    treeFrame.pack(pady=10, fill=tk.BOTH, expand=True)

    columns = ("First Name", "Middle Name", "Last Name", "Birthday",
"Gender")
    tree = ttk.Treeview(treeFrame, columns=columns, show='headings')

    for col in columns:
        tree.heading(col, text=col)
        tree.column(col, anchor=tk.CENTER, width=120)

    tree.pack(fill=tk.BOTH, expand=True)

    #Buttons Frame
    buttonFrame = tk.Frame(root, bg='#e6e6fa')
    buttonFrame.pack(pady=10)
```

```
    tk.Button(buttonFrame, text="View All Records", font=("Roboto", 12,
'bold'), bg='#9370DB', fg='white',
command=openViewRecords).pack(side=tk.LEFT, padx=10)
    tk.Button(buttonFrame, text="Back", font=("Roboto", 12, 'bold'),
bg='#8B0000', fg='white', command=goBack).pack(side=tk.LEFT, padx=10)
```

#viewRecord.py

```
import tkinter as tk #gui
from tkinter import ttk, messagebox
import csv #file handling/data persistence

RECORDS_FILE = "records.csv"

def loadRecords():
    # Load records from a CSV file and skip the first row (header)
    try:
        with open(RECORDS_FILE, mode='r', newline='') as file:
            reader = csv.reader(file)
            records = list(reader)
            return records[1:] if len(records) > 1 else []
    except FileNotFoundError:
        messagebox.showerror("Error", "The records file does not exist.")
    except Exception as e:
        messagebox.showerror("Unexpected Error", str(e))
    return []

def viewRecordWindow(mainWindow):
    # Open a new window to display all records sorted by Last Name
    root = tk.Toplevel(mainWindow)
    root.title("View Records")
    root.geometry("700x500")
    root.configure(bg='#e6e6fa')

    tk.Label(root, text="Records Viewer", font=("Roboto", 18, 'bold'),
bg='#e6e6fa', fg='#4B0082').pack(pady=3)

    treeFrame = tk.Frame(root, bg='#e6e6fa')
    treeFrame.pack(pady=3, fill=tk.BOTH, expand=True)

    # Adjust column order: Last Name first
    columns = ("Last Name", "First Name", "Middle Name", "Birthday",
"Gender")
    tree = ttk.Treeview(treeFrame, columns=columns, show='headings',
height=10)
```

```
    for col in columns:
        tree.heading(col, text=col)
        tree.column(col, anchor=tk.CENTER, width=120)
    tree.pack(fill=tk.BOTH, expand=True)

    # Load and correctly reorder records
    records = loadRecords()

    # Sort records by Last Name
    sorted_records = sorted(records, key=lambda record: record[2].lower())

    for record in sorted_records:
        if len(record) == 5:
            first_name, middle_name, last_name, birthday, gender = record
            tree.insert("", "end", values=(last_name, first_name,
middle_name, birthday, gender))

    # Close Button
    tk.Button(root, text="Close", font=("Roboto", 12), bg="#8B0000",
fg="white", command=root.destroy).pack(side="bottom", pady=5,
anchor="center")
```

#fileHandeler.py

```
import os
import csv

def saveRecords(filename, data):
    file_exists = os.path.isfile(filename) #check if file exists

    try:
        with open(filename, mode='a', newline='') as file:
            fieldnames = ["First Name", "Middle Name",
                          "Last Name", "Birthday", "Gender"]
            writer = csv.DictWriter(file, fieldnames=fieldnames)

    #write the header only if the file does not exist
            if not file_exists:
                writer.writeheader()

#Write the new record to the file
            writer.writerow({
                "First Name": data[0],
                "Middle Name": data[1],
                "Last Name": data[2],
                "Birthday": data[3],
                "Gender": data[4]
            })
    except Exception as e:
```

```
        print("Error saving record: ", e)


#FUNCTION load records
def loadRecords(filename):
    try:
        if not os.path.exists(filename):
            return []
        with open(filename, mode='r', newline='') as file:
            reader = csv.DictReader(file)
            records = list(reader)
            return records
    except Exception as e:
        print("Error loading records: ", e)
        return []
```

V. SUMMARY AND DISCUSSION

The User Registration Program is a Python-based application designed for efficient user management using a Tkinter-based graphical user interface (GUI). It allows users to sign up, view records, search specific entries, update details, and delete records while ensuring data persistence through CSV file handling. The program follows create and read principles and incorporates input validation and error handling mechanisms to maintain data integrity and usability. It utilizes key Python libraries such as Tkinter for the interface and CSV for file handling. The system is structured into multiple class-based modules, including main.py for program execution, signUp.py for user registration, searchRecord.py for searching functionalities, and viewRecord.py for displaying records. Each module consists of relevant methods such as add_user(), search_by_name(), view_all_records(), and delete_record() to perform core operations effectively.

By transitioning from a console-based system to an interactive GUI, the project enhances user experience and accessibility while ensuring organized record management through alphabetized sorting. While the system effectively addresses basic user management needs, future enhancements could include integrating authentication features or migrating from CSV storage to a more scalable database solution like SQLite or MySQL. Overall, this project demonstrates Python's capability in developing practical applications and highlights the importance of structured programming, GUI design, and data management techniques in software development.