

# SHSG Inventory Manager

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# The Idea



- Creating a **self-explanatory** Inventory Application with **persistent data** that can be accessed by **multiple users**
  - Creating both a terminal and web application
  - Easy accessibility and readability of the program
  - Utilization of Python libraries
  - Usage of a databank for data persistence
  - Combining knowledge of the course with self-taught concepts

# Development Process

The exiting part

# Early development and planning



```
class Storage:
    def __init__(self):
        self.items = []

    def add_item(self, name, expiry_date, department):
        print("Hello please enter the following requirements")
        print("-----")
        num_of_items = int(input("How many items do you want to enter in the registry?" ))

        while num_of_items < 0:
            print("You cannot enter numbers below 0")
            num_of_items = int(input("How many items do you want to enter in the registry? "))

        while num_of_items >= 0:
            name = input("Enter the name of the item: ")
            expiry_date = input("Enter the expiry date of the item: ")
            department = input("Enter the department of the item: ")
            item = {'name': name, 'expiry_date': expiry_date, "department": department}
            self.items.append(item)

            num_of_items -= 1

        print("Thank you")
        return 0

#CSV //////////////////////////////////////
def save_items(self):
    with open("inventory.csv", "a") as file_out:
        file_out.write("name,expiry_date,department\n")
        for item in self.items:
            line = item['name'] + "," + item['expiry_date'] + "," + item['department'] + "\n"
            file_out.write(line)

def delete_item(self, name):
    self.items = [item for item in self.items if item['name'] != name]
    self.save_items()

#CSV //////////////////////////////////////
```

- Applying knowledge learned from the course
- Asking coaches for feedback
- Saving data in a .csv file

# Developing



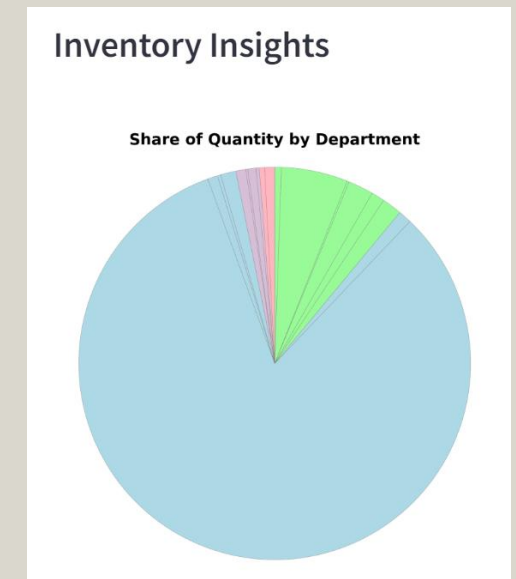
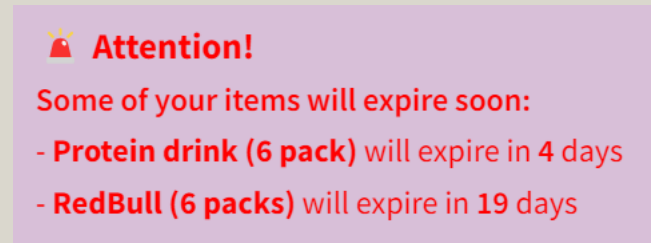
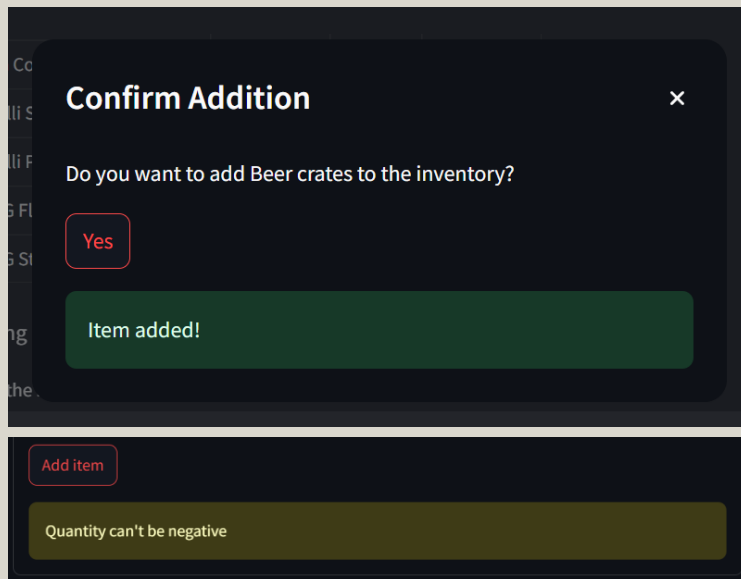
- Switching over from .csv files to SQLite database
- Finishing the terminal program
- Using Streamlit as webUI
- Improving the existing code with new knowledge
- Making application user-friendly, preventing user errors



# Refinement and polishing



- Pop-up windows/dialogue for confirming a change in Streamlit
- Adding extra widgets to Streamlit for a better overview/visualisation of the list



# Architecture

Visualised using a model

## Terminal

```
(base) flonabAI-von-Flona documents > python InventoryApp.py
1. Add an item.
2. View all items.
3. View items by expiry date.
4. View items alphabetically.
5. View items by department.
6. Search for an item.
7. Delete an item.
8. Adjust item quantity.
9. Exit
Please choose an option (1-9): 2
(1) 'Beer crates', 'General', 10, '2025-09-11'
(2) 'RedBull (6 packs)', 'ClubA', 20, '2025-07-15'
(3) 'SHSG Hoodies', 'General', 61, None
(4) 'Laptops', 'ClubB', 12, None
(5) 'Ovomaltine bars (packs of 3)', 'ClubC', 8, '2024-09-12'
(6) 'Protein drink (6 pack)', 'ClubB', 3, '2024-09-09'
(7) 'Headphones', 'ClubA', 15, None
(8) 'RedBull (6 packs)', 'ClubB', 15, '2024-09-24'
(9) 'Rivella (6 packs)', 'ClubC', 15, '2024-09-25'
(10) 'Coca Cola cans (6 packs)', 'General', 30, '2024-10-17'
(11) 'Barelli Spaghetti (boxes of 6)', 'ClubA', 20, '2025-01-17'
(12) 'Barelli Pesto (6 pack of glasses)', 'General', 30, '2027-01-19'
(13) 'SHSG Flagg', 'General', 3, None
(14) 'Beer crates', 'ClubA', 5, '2025-10-15'
(15) 'RedBull (6 packs)', 'ClubB', 8, '2025-10-15'
(16) 'Protein drink (6 pack)', 'ClubB', 3, '2025-09-09'
(17) 'SHSG Flagg', 'General', 4, None
(18) 'T-Shirt', 'ClubC', 4, None
(19) 'T-Shirt', 'General', 8, None
(20) 'T-Shirt', 'ClubA', 14, None
```

## Python Script

```
InventoryApp.py
1 # Application for managing the SHSG inventory
2
3 import sqlite3
4 from datetime import datetime
5
6 # Superklasse für alle Inventargegenstände
7 class Inventory:
8     VALID_DEPARTMENTS = ["ClubA", "ClubB", "ClubC", "General"]
9
10     def __init__(self, name, department, quantity):
11         self.name = name
12         self.department = self.validate_department(department)
13         self.quantity = quantity
14
15     def validate_department(self, department):
16         if department not in self.VALID_DEPARTMENTS:
17             return None
18         return department
19
20     def create_item(self, conn):
21         cursor = conn.cursor()
```

**Superclass  
(Non-Perishable)**

- Name
- Department
- Quantity

**Subclass  
(Perishables)**

- Expiry Date

## View Database (Pandas Dataframe)



## Edit Database

**Edit Database**

Add a new item to the current inventory.

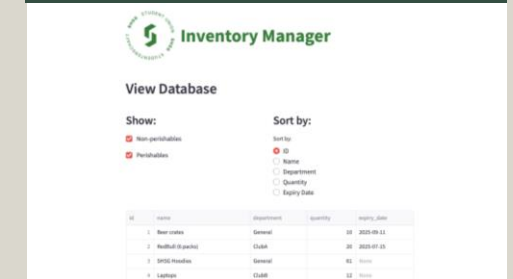
Item name:

Department:

Quantity:

Expiry Date:

## Streamlit App



## Python Script

```
StInventoryApp.py
1 # WebApp for viewing and editing the SHSG Inventory Database
2
3 # Import Libraries
4 import sqlite3
5 import pandas as pd
6 import streamlit as st
7 from datetime import datetime, timedelta
8 from InventoryApp import Inventory, InventoryPerishable
9 import matplotlib.pyplot as plt
10
11 # Connect to Database and query all entries
12 conn = sqlite3.connect('Inventory.db')
13 query = "SELECT * FROM inventory"
14 df = pd.read_sql(query, conn)
15
16 # Create two columns to display logo and title next to each other
17 col1, col2 = st.columns(2, gap="medium", vertical_alignment="center")
18 with col1:
19     st.image("SHSG_Logo_Circle_100x100mm_RGB_green_6031ace0.png", width=100)
20 with col2:
21     st.markdown("""
22         <div style="display: flex; align-items: center; height: 100px;">
23             <div style="flex: 1; text-align: center; height: 100px;">
24                 <h1>SHSG Inventory Manager</h1>
25             </div>
26         </div>
27     """)
```



## Database

id	name	department	quantity	expiry_date
1	Beer crates	General	10	2025-09-11
2	RedBull (6 packs)	ClubA	20	2025-07-15
3	SHSG Hoodies	General	61	None
4	Laptops	ClubB	12	None
5	Ovomaltine bars (packs of 3)	ClubC	8	2024-09-12
6	Protein drink (6 pack)	ClubB	3	2024-09-09
7	Headphones	ClubA	15	None
8	RedBull (6 packs)	ClubB	15	2024-09-24
9	Rivella (6 packs)	ClubC	15	2024-09-25
10	Coca Cola cans (6 packs)	General	30	2024-10-17



# Overview & Features

Abilities of the code

# Tools used:



- SQLite Database management system
- Streamlit Library within Python, used for web applications
- Pandas Library within Python, used for data manipulation
- Datetime Library within Python, Getting current date to calculate time until expiry date
- Matplotlib.pyplot Library within Python, used for advanced charts

# Live Demonstration

# Python




```
1. Add an item.
2. View all items.
3. View items by expiry date.
4. View items alphabetically.
5. View items by department.
6. Search for an item.
7. Delete an item.
8. Adjust item quantity.
9. Exit
Please choose an option (1-9): █
```

```
(1, 'Beer crates', 'General', 10, '2025-09-11')
(2, 'RedBull (6 packs)', 'ClubA', 20, '2025-07-15')
(3, 'SHSG Hoodies', 'General', 100, None)
(4, 'Laptops', 'ClubB', 12, None)
(5, 'Ovomaltine bars (packs of 3)', 'ClubC', 8, '2024-09-12')
(6, 'Protein drink (6 pack)', 'ClubB', 3, '2024-09-09')
(7, 'UBS flyers', 'General', 20, None)
(8, 'Headphones', 'ClubA', 15, None)
(9, 'RedBull (6 packs)', 'ClubB', 15, '2024-09-24')
(10, 'Rivella (6 packs)', 'ClubC', 15, '2024-09-25')
(11, 'Coca Cola cans (6 packs)', 'General', 30, '2024-10-17')
(12, 'Barelli Spaghetti (boxes of 6)', 'ClubA', 23, '2025-01-17')
(13, 'Barelli Pesto (6 pack of glasses)', 'General', 38, '2027-01-19')
(14, 'SHSG Flags', 'General', 3, None)
(15, 'SHSG StartWeek Bags', 'ClubA', 1500, '2026-09-01')
(16, 'Beer crates', 'ClubA', 5, '2025-10-15')
(17, 'Beer crates', 'ClubB', 5, '2025-10-15')
```

# Streamlit





## Inventory Manager

### View Database

**Show:**

- ☒ Non-perishables
- ☒ Perishables

**Sort by:**

- ☒ ID
- ☐ Name
- ☐ Department
- ☐ Quantity
- ☐ Expiry Date

id	name	department	quantity	expiry_date
8	Headphones	ClubA	15	None
9	RedBull (6 packs)	ClubB	15	2024-09-24
10	Rivella (6 packs)	ClubC	15	2024-09-25
11	Coca Cola cans (6 packs)	General	30	2024-10-17
12	Barelli Spaghetti (boxes of 6)	ClubA	23	2025-01-17
13	Barelli Pesto (6 pack of glasses)	General	38	2027-01-19
14	SHSG Flags	General	3	None
15	SHSG StartWeek Bags	ClubA	1,500	2026-09-01
16	Beer crates	ClubA	5	2025-10-15
17	Beer crates	ClubB	5	2025-10-15

### Edit Database

Add a new item to the current inventory:

Item name

Department

ClubA

Quantity

0

-

+

Is item perishable?

No

Enter the expiry date

2024/09/05

Add item

Remove an item from the current inventory:

Enter the ID of the item you want to delete

Preview

Delete

## Department Overview

### General

6 Registered items:

-Beer crates:	10
-SHSG Hoodies:	100
-UBS flyers:	20
-Coca Cola cans (6 packs):	30
-Barelli Pesto (6 pack of glasses):	38
-SHSG Flags:	3

### ClubA

5 Registered items:

-RedBull (6 packs):	20
-Headphones:	15
-Barelli Spaghetti (boxes of 6):	23
-SHSG StartWeek Bags:	1500
-Beer crates:	5

### ClubB

4 Registered items:

-Laptops:	12
-Protein drink (6 pack):	3
-RedBull (6 packs):	15
-Beer crates:	5

#### 🚨 Attention!

Some of your items will expire soon:

- **Protein drink (6 pack)** will expire in 4 days
- **RedBull (6 packs)** will expire in 19 days

### ClubC

2 Registered items:

-Ovomaltine bars (packs of 3):	8
-Rivella (6 packs):	15

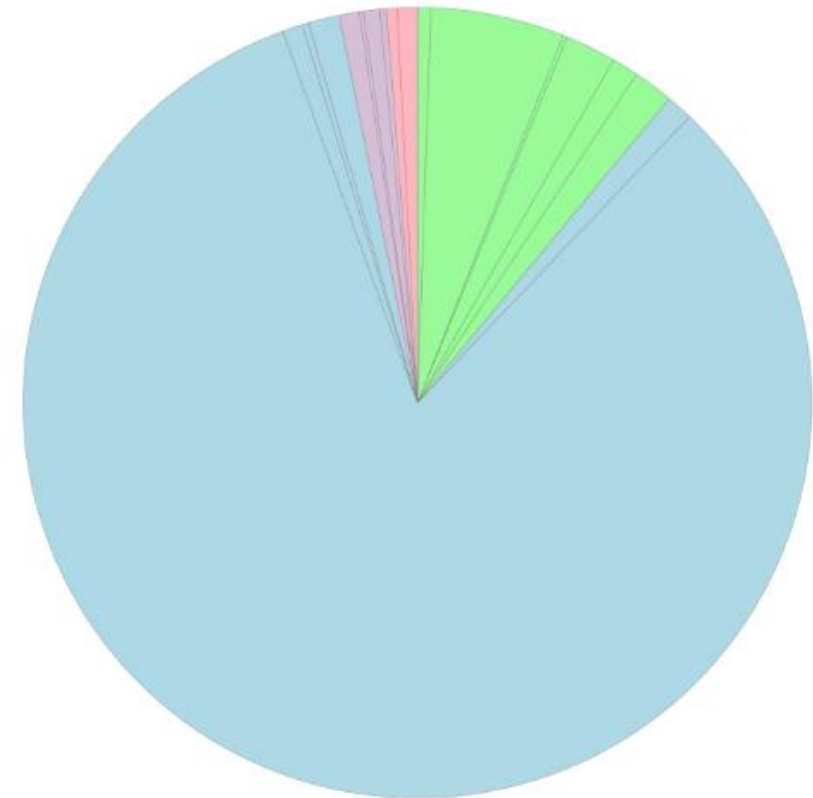
#### 🚨 Attention!

Some of your items will expire soon:

- **Ovomaltine bars (packs of 3)** will expire in 7 days
- **Rivella (6 packs)** will expire in 20 days

## Inventory Insights

Share of Quantity by Department



# Reflection & Challenges

Future opportunities

# Main issues



## Streamlit

- Editing Database
- Some ideas couldn't be implemented due to the limitations of the programme

## Python

- .csv file for storage was impractical



# Reflection



- Insight into the world of coding and software engineering
- Acquisition of new knowledge on Streamlit, SQLite, Pandas
- Limit testing of ChatGPT

# Thank you for listening

We are open to questions