LIBRARY MANAGEMENT SYSTEM

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Abstract

This report illustrates the Library Management System project, which is created to manage daily book transactions, manage users, and keep track of books with more efficiency. It can help the library better manage its book collection.

Librarians and library administrators are the primary users of this library management system. The member maintenance module, book maintenance module, book transaction module is all managed by a normal librarian. In addition, the library management system allows users to manage the lost book module.

This library system has several advantages and disadvantages as compared to other library systems, such as the lack of smart card technology, inability to retain data, and so on. Using smart card technology, we may be able to improve the system at some point. We can use data management software like SQL to store information efficiently.

Contents

Introduction

Library Management System is a program that links to other library systems and is designed for small and medium-sized libraries. It is used by librarians and library administrators to use a computerized system to run the library. The system was created and designed to assist librarians in recording every book transaction so that issues such as file or record loss do not occur anymore.

This Library Management System also includes a book and member maintenance function. Users can create, update, and delete members and books in the system. The library will not lose book or member records because of this computerized maintenance, which is a common occurrence when no computerized system is used.

When a user loses a book, they can contact the librarian and utilize the Lost Book Record to register it and receive a fee that is double the original price plus an additional 100 taka. Even for delay in book return user must pay late return fee. To organize book in order and reach for it this system have different functions that makes things easier for both user and staff members of the library.

In comparison to libraries without a computerized system, all these features can help librarians run their libraries with greater ease and efficiency.

Project Objectives

The project objectives are:

- To prevent problems such missing record files, every transaction would be recorded in a computerized system;
- To eliminate the paperwork in library;
- To design an user friendly library management system.

Technical Requirements

Development Environment

Software:

- Operating System: Microsoft Windows 10 Home Single Language
- Development Tools and Programming Language: Microsoft Visual Studio Code and Google Colaboratory

Hardware:

- Processor: Intel(R) Core(TM) i7-1065G7 CPU @ 1.30GHz 1.50 GHz
- RAM: 8.00 GB

Operation Environment

Processor	Intel(R) Core(TM) i7-1065G7 CPU @ 1.30GHz 1.50 GHz or better performance
Operating System	Microsoft Windows 10 Home Single Language or Windows 10
Memory	2.00 GB RAM
Screen Resolution	Monitor with screen resolution minimum 1280 x 1024
Hard Disk Space	Minimum 6 GB

Figure: Table for Operation Environment

Software Requirement Specification (SRS)

Product Description

A library management system is a computerized system that assists librarians in managing the everyday activities of the library electronically. It lowers the chances of file loss, file damage, and time-consuming paperwork. It can assist users in more successfully managing transactions or records while also saving time.

Problem Statement

The problem occurred before having computerized system includes:

- **File Damaged:** The file/record will be damaged by accident if no computerized system is implemented. For example, if the librarian knocks over a cup of tea or coffee, the liquid spills into the paper file. The record is going to be ruined. Natural disasters, such as floods, can also cause problems on the file system.
- **File Lost:** In the other case, due to human error and the environment, the file is often lost. Because there were so many people waiting to borrow books, librarians didn't always return the records to their original location. Due to the chaotic surroundings, the file went missing after that.
- **Space-Consuming:** After a long period of operation, the library's records are increasing in number. Finally, the physical record took up too much space so there was nowhere to save the file.
- **Cost Consuming:** Every new record requires the use of paper. After a period, the cost of purchasing paper can be considerable. To address the problem of long lines, the library, on the other side, needs to hire more employees. There isn't enough time to conduct the book transaction if the library has one employee.
- **Difficult to Search Record:** The librarian has a difficult time finding the user's record when a member wants to borrow a book without the computerized system. When many people are waiting to borrow books, it will take a long time.
- **Difficult to View Reports:** Without the use of a computerized system, a report needs to be created manually. The administrator must obtain the book transaction record and locate the information according to the time. It takes a long time to create a single report.

Diagram

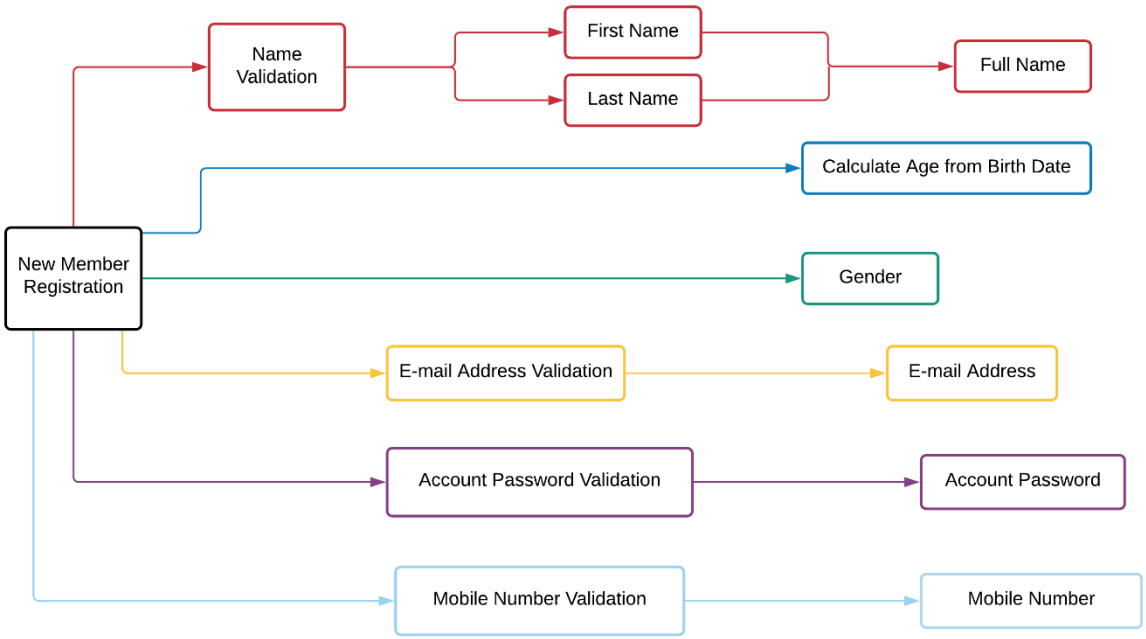

Figure: Diagram of New Member Registration

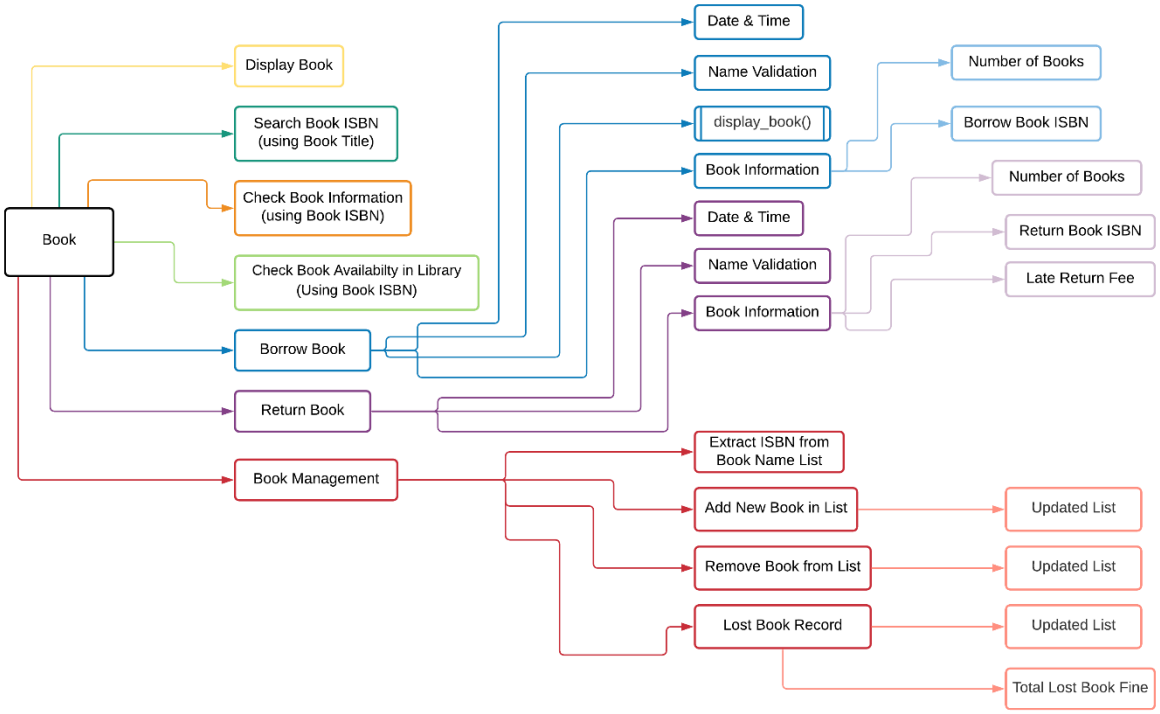

Figure: Diagram of Book Maintenance

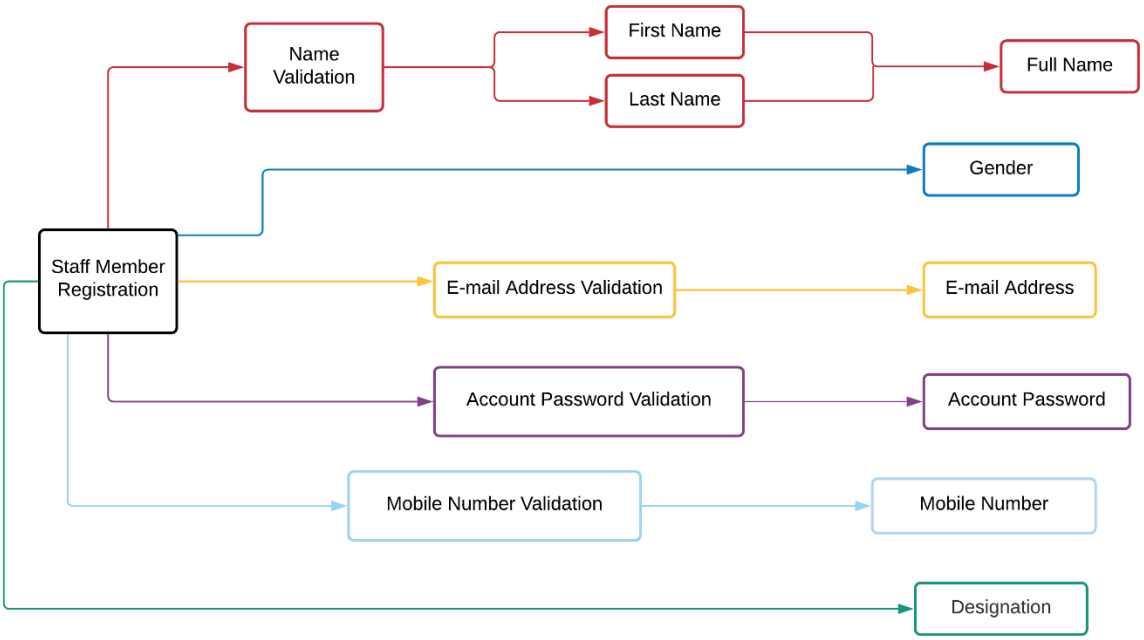

Figure: Diagram of Staff Member Registration

Code Process

Main Menu:

1. New Member Registration
2. Display Book List
3. Search Book ISBN (Using Book Title)
4. Check Book Information (Using Book ISBN)
5. Check Book Availability in Library (Using Book ISBN)
6. Borrow Book
7. Return Book
8. Book Management Menu (Only Allowed for Library Authority & Staff)
9. Staff Member Registration

Book Management Menu

1. Extract Book ISBN from Book List
2. Add New Book in the Book ISBN List
3. Remove Book from the Book ISBN List
4. Lost Book Record

i. **New Membership Registration**
   - **a)** Name Input from User and Check Validity
   - **b)** Birth Date Input from User and Age Count
   - **c)** Gender Input from User
   - **d)** E-mail Input from User and Check Validity
   - **e)** Password Input from User and Check Validity
   - **f)** Mobile Number Input from User and Check Validity

ii. **Staff Member Registration**
   - **a)** Name Input from User and Check Validity
   - **b)** Gender Input from User
   - **c)** E-mail Input from User and Check Validity
   - **d)** Password Input from User and Check Validity
   - **e)** Mobile Number Input from User and Check Validity
   - **f)** Input Designation from User

Google Colaboratory Link:

https://colab.research.google.com/drive/1S-6P-XiJbvJaSWukkesUIQfMDhDo3zVP?usp=sharing

Google Drive Link:

https://drive.google.com/drive/folders/114wsbtq9xb6rHmmyw5ofIZEQq6hB2CQf?usp=sharing

Lucidcharts:

https://lucid.app/lucidchart/invitations/accept/inv_251567f2-c565-4494-83ab-6dcf219ac64e

Flow Chart

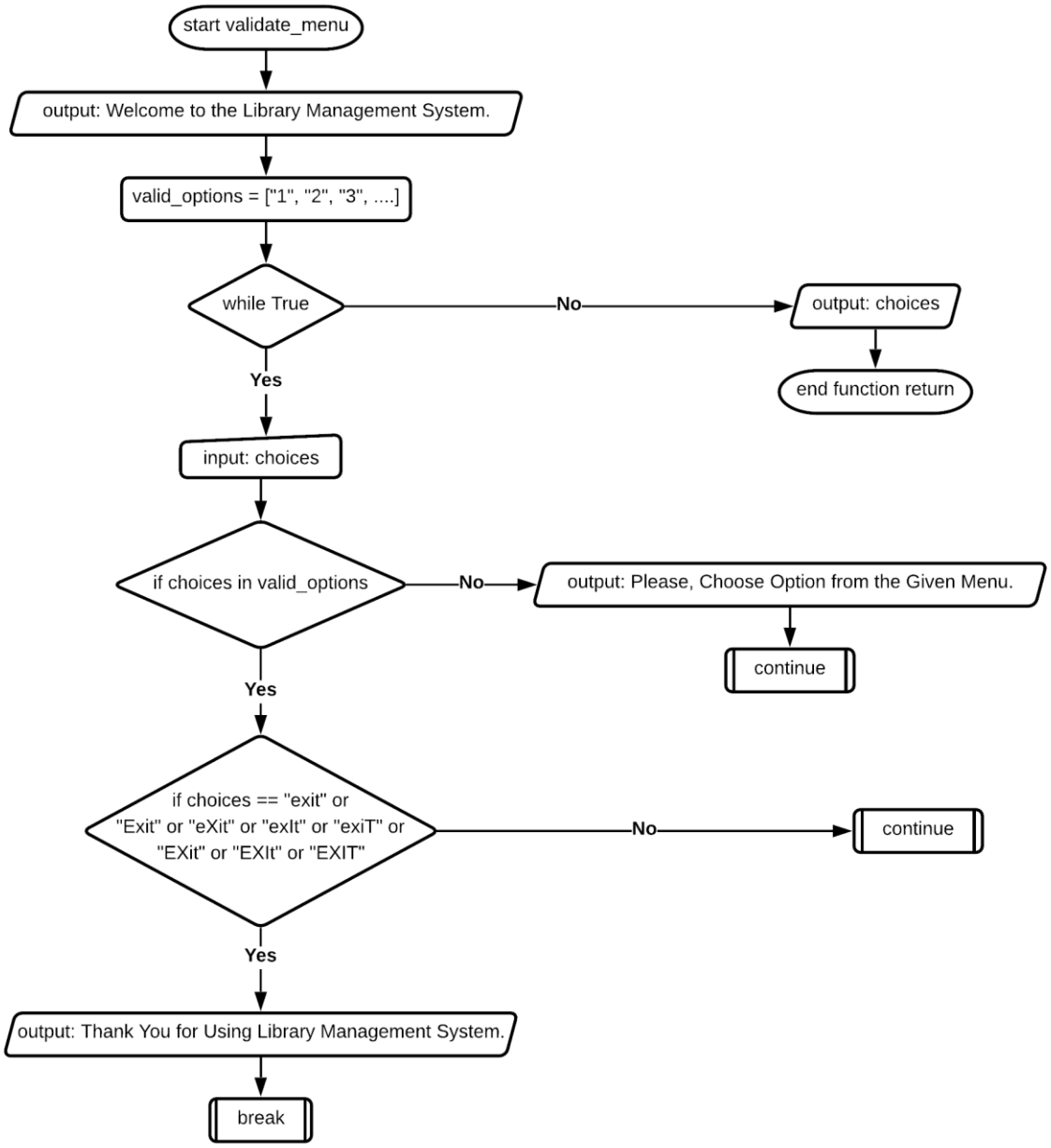

Figure: Main Menu Flowchart

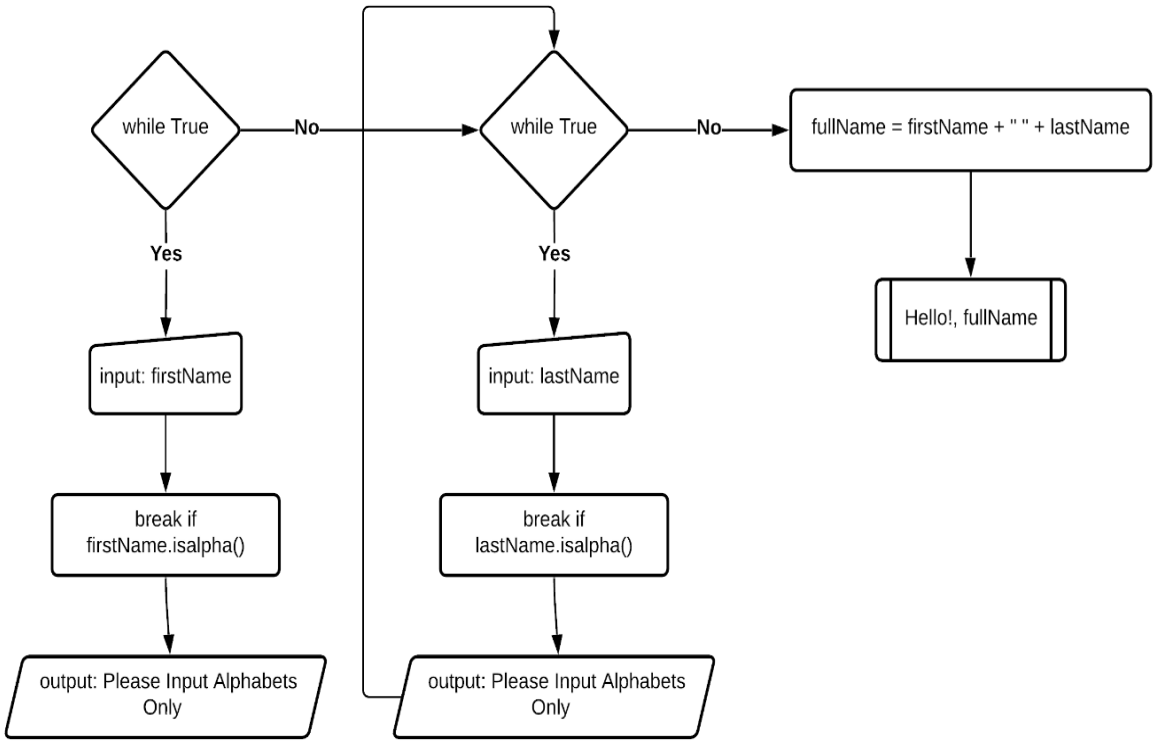

Figure: Name Flowchart 1

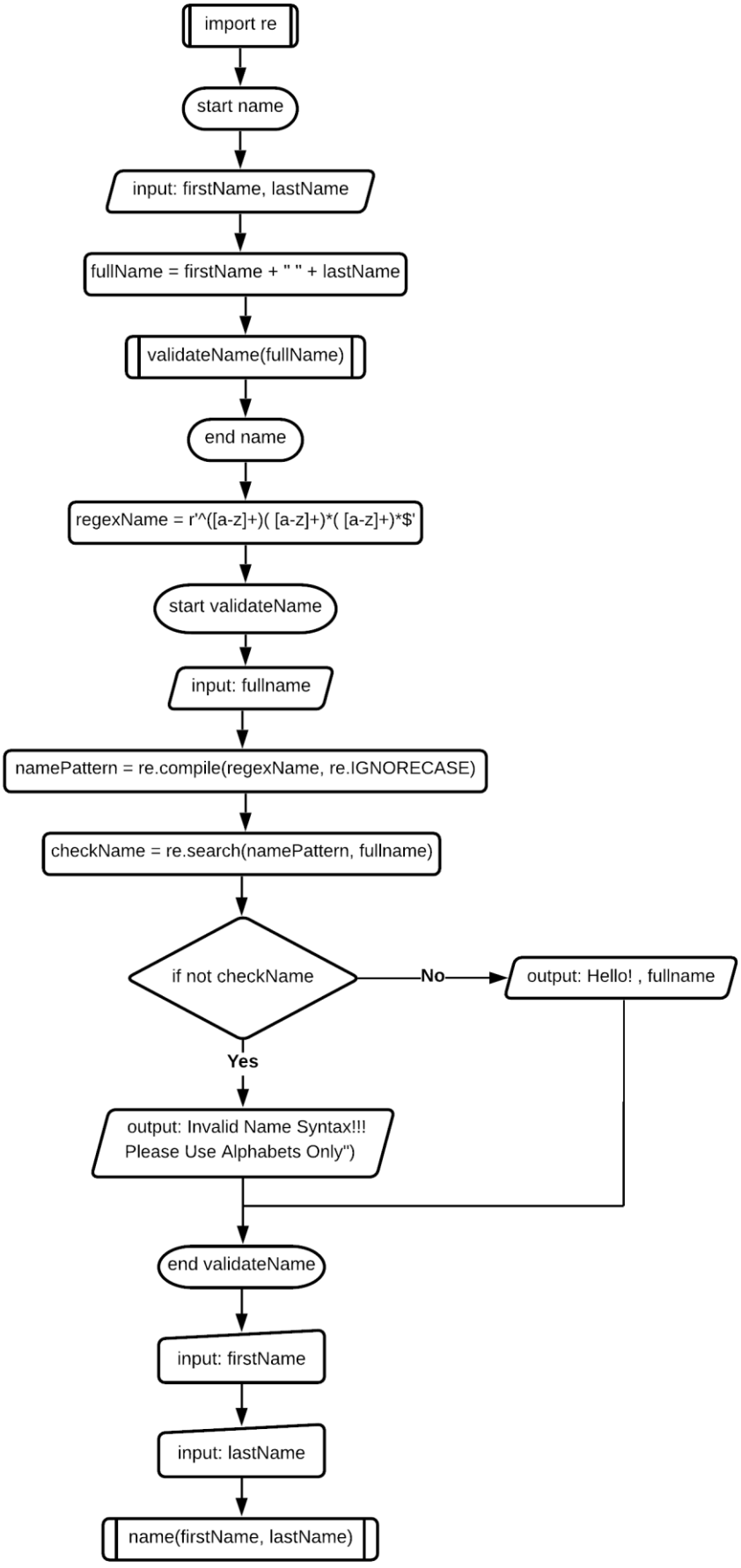

Figure: Name Flowchart 2

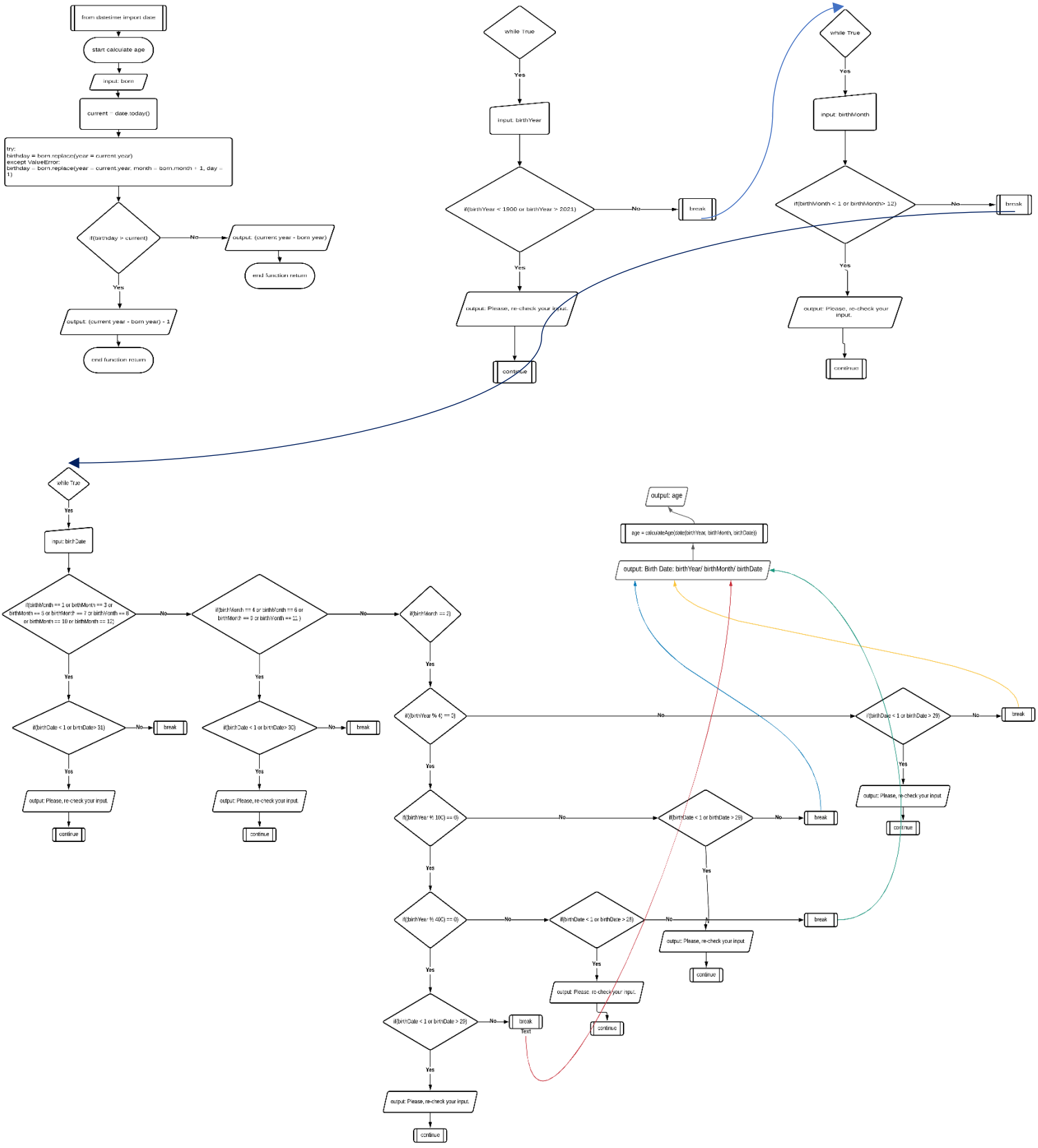

Figure: Age Flowchart

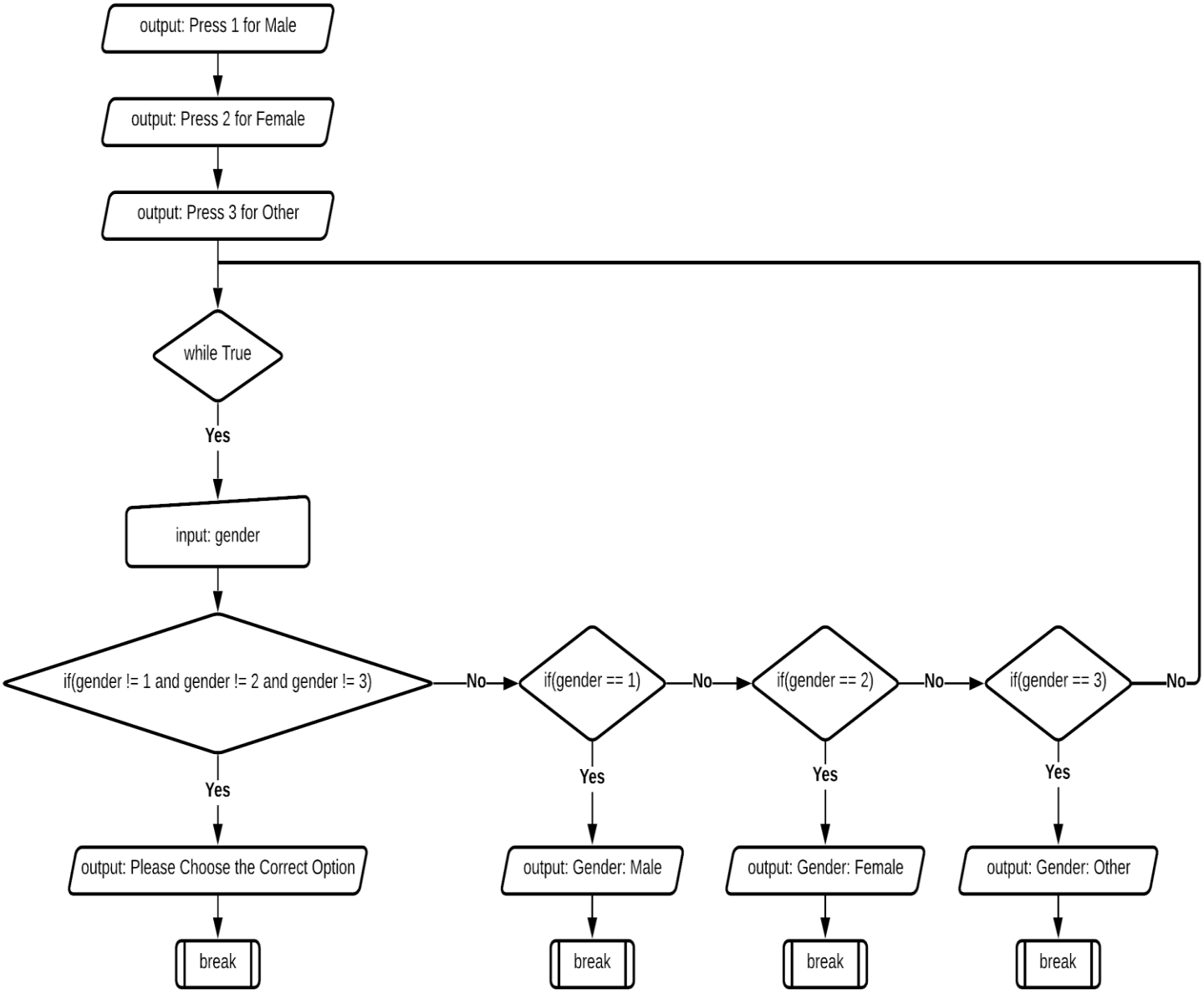

Figure: Gender Flowchart

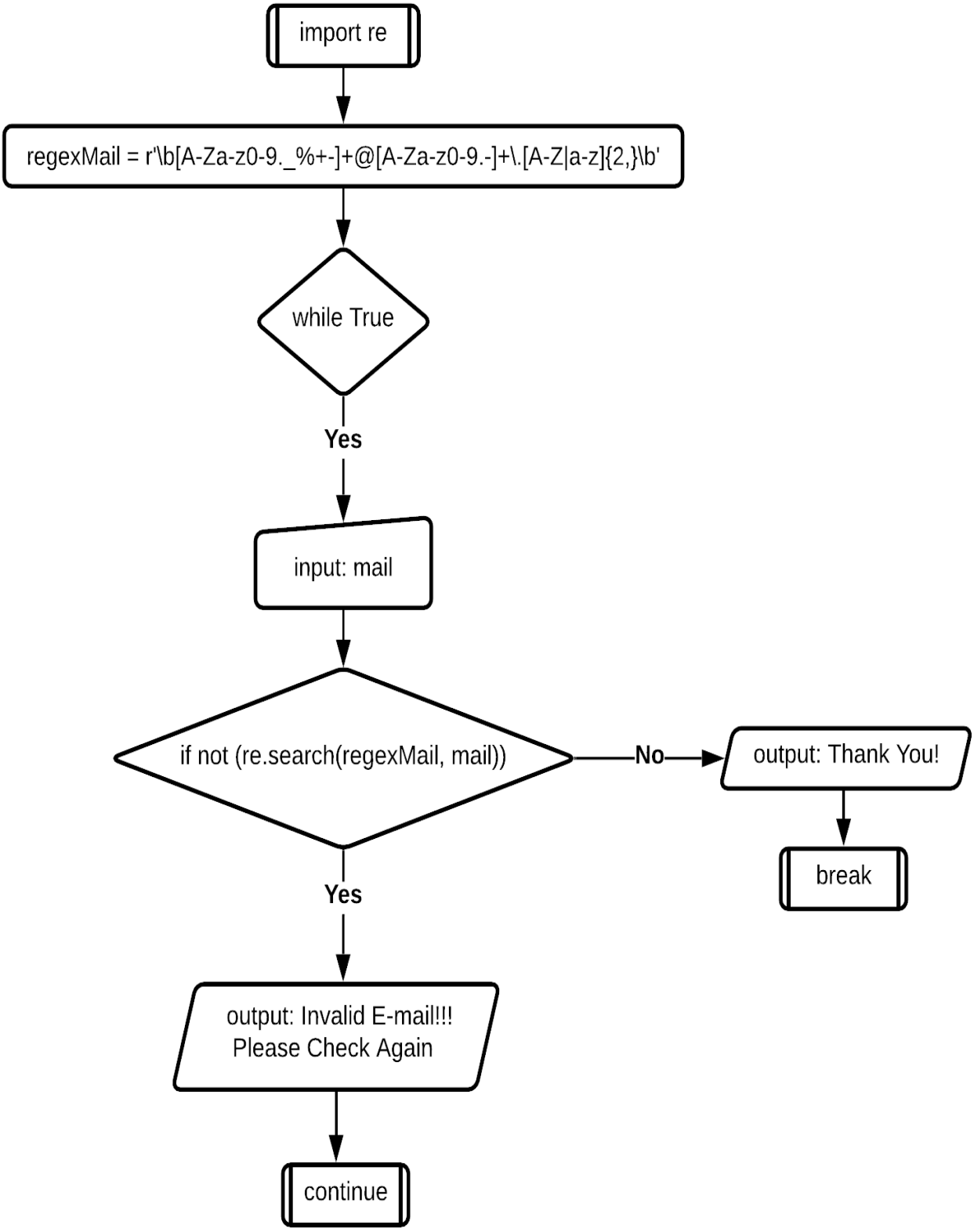

Figure: E-mail Address Flowchart

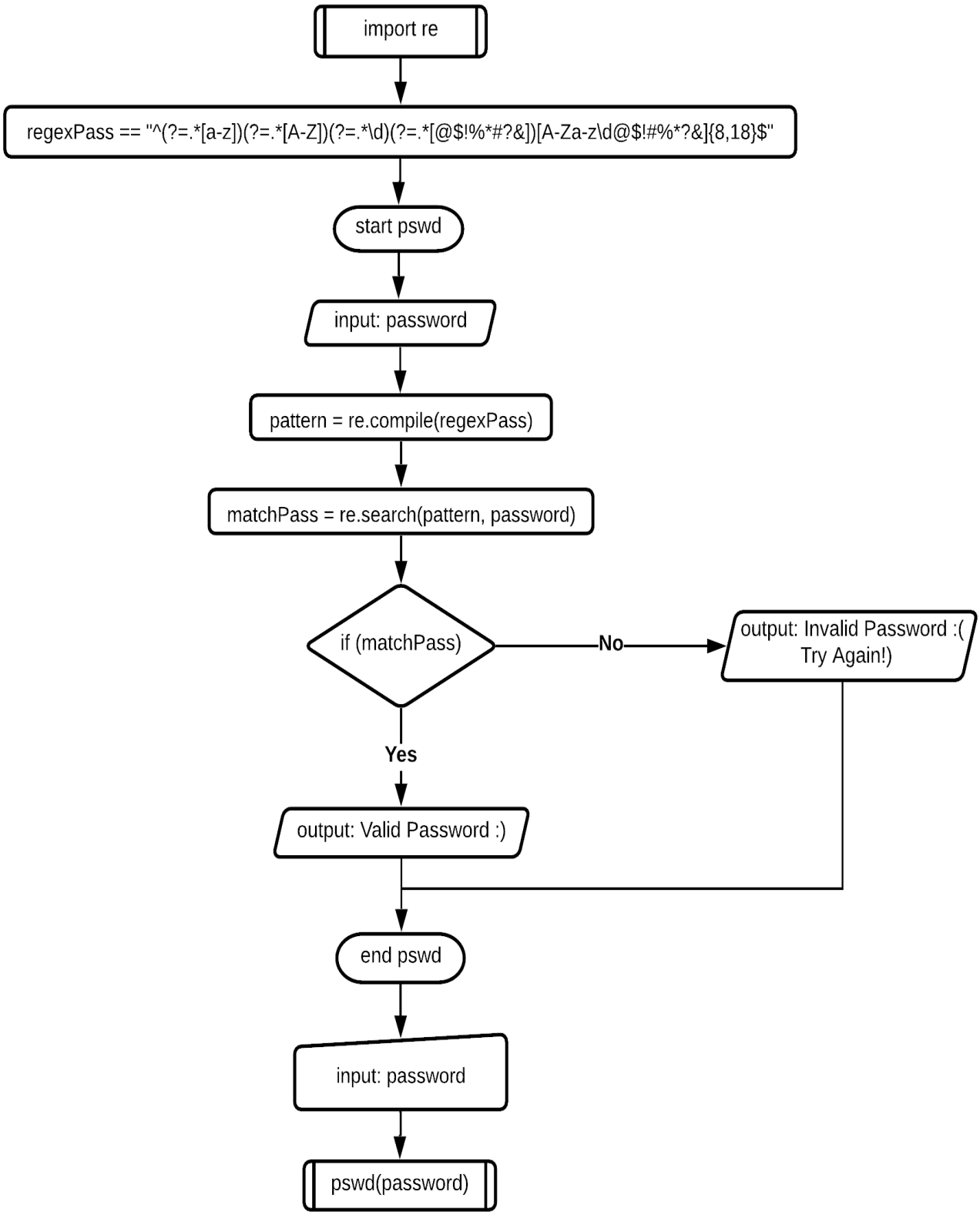

Figure: Password Flowchart

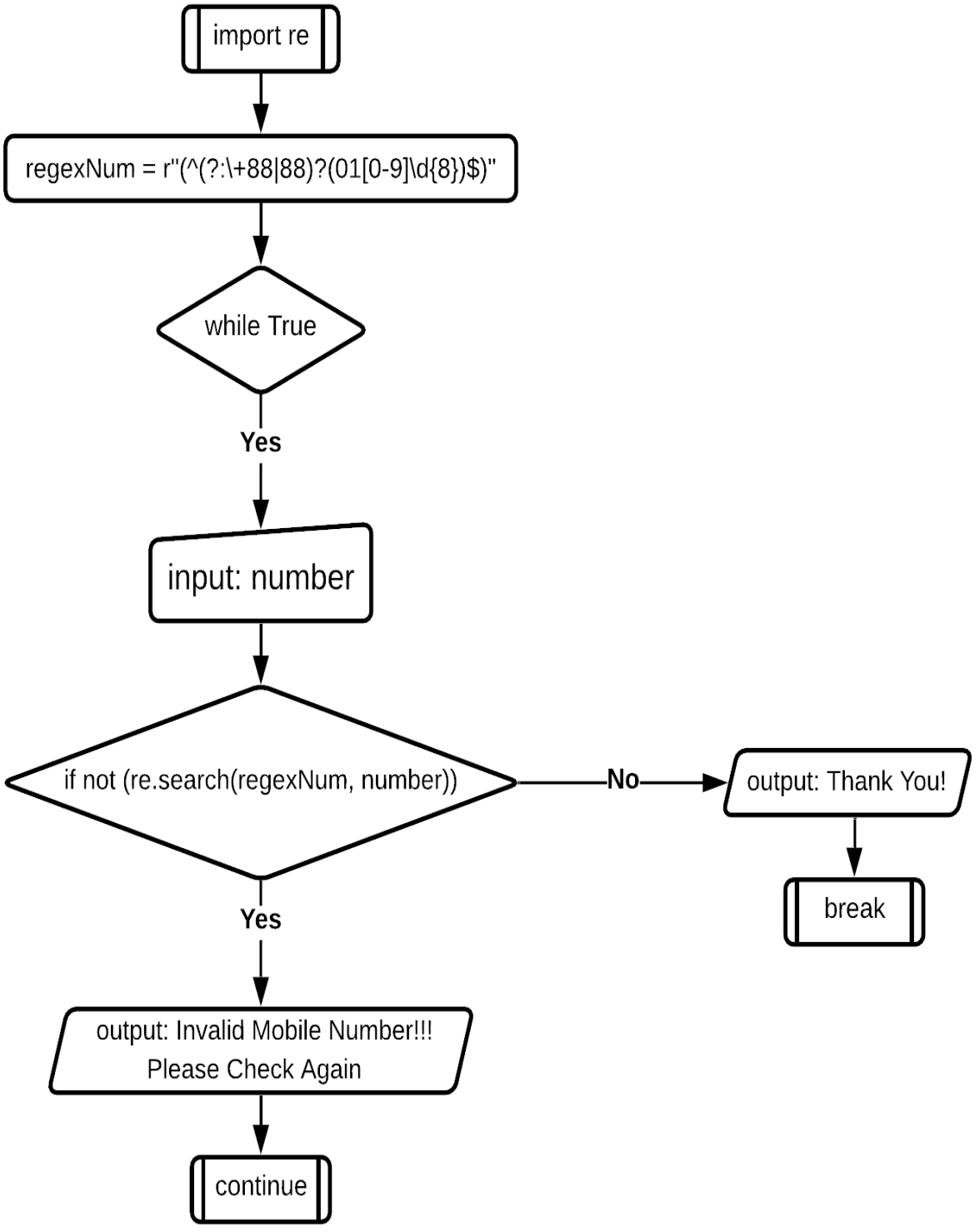

Figure: Mobile Number Flowchart

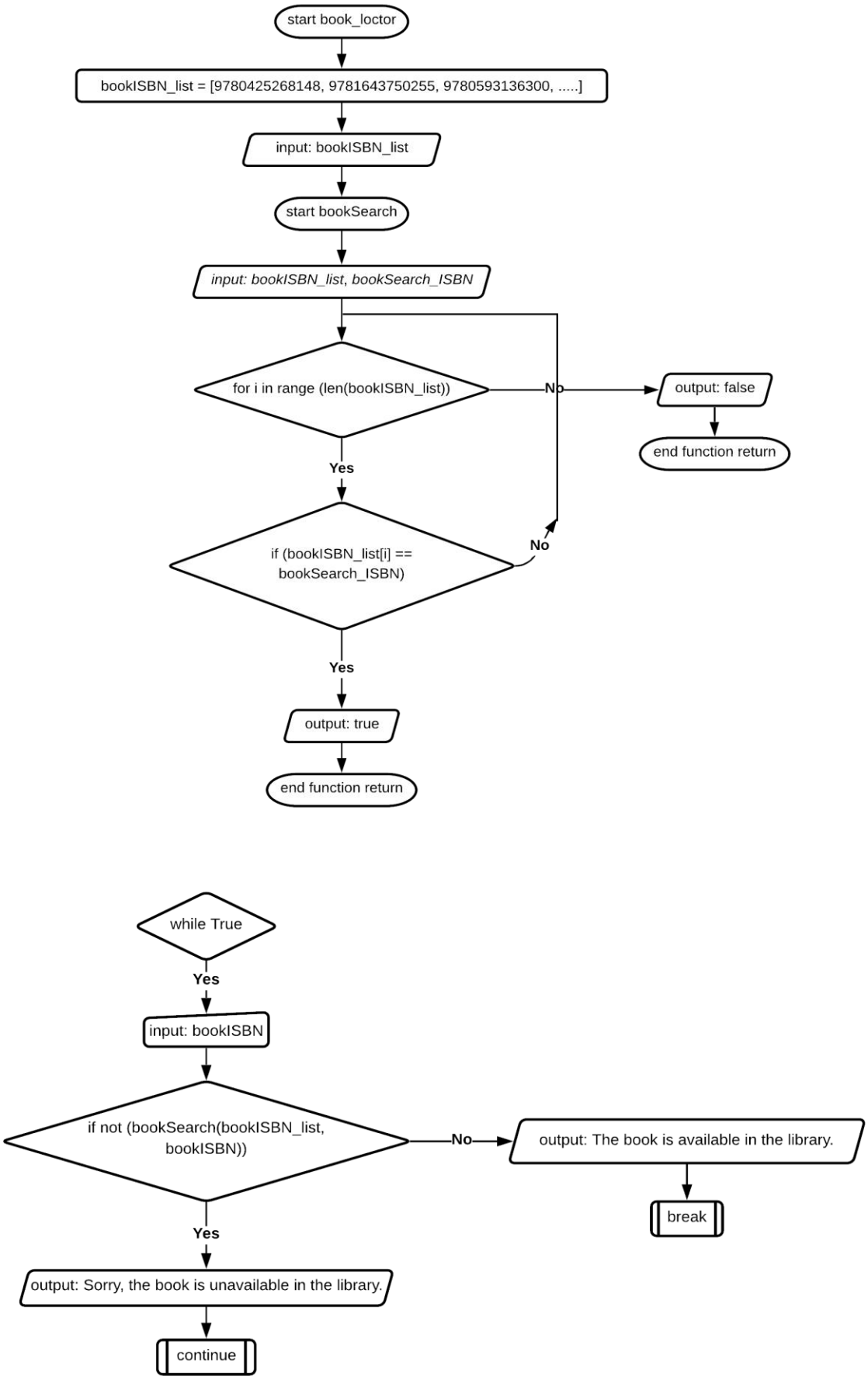

Figure: Book Locator Flowchart

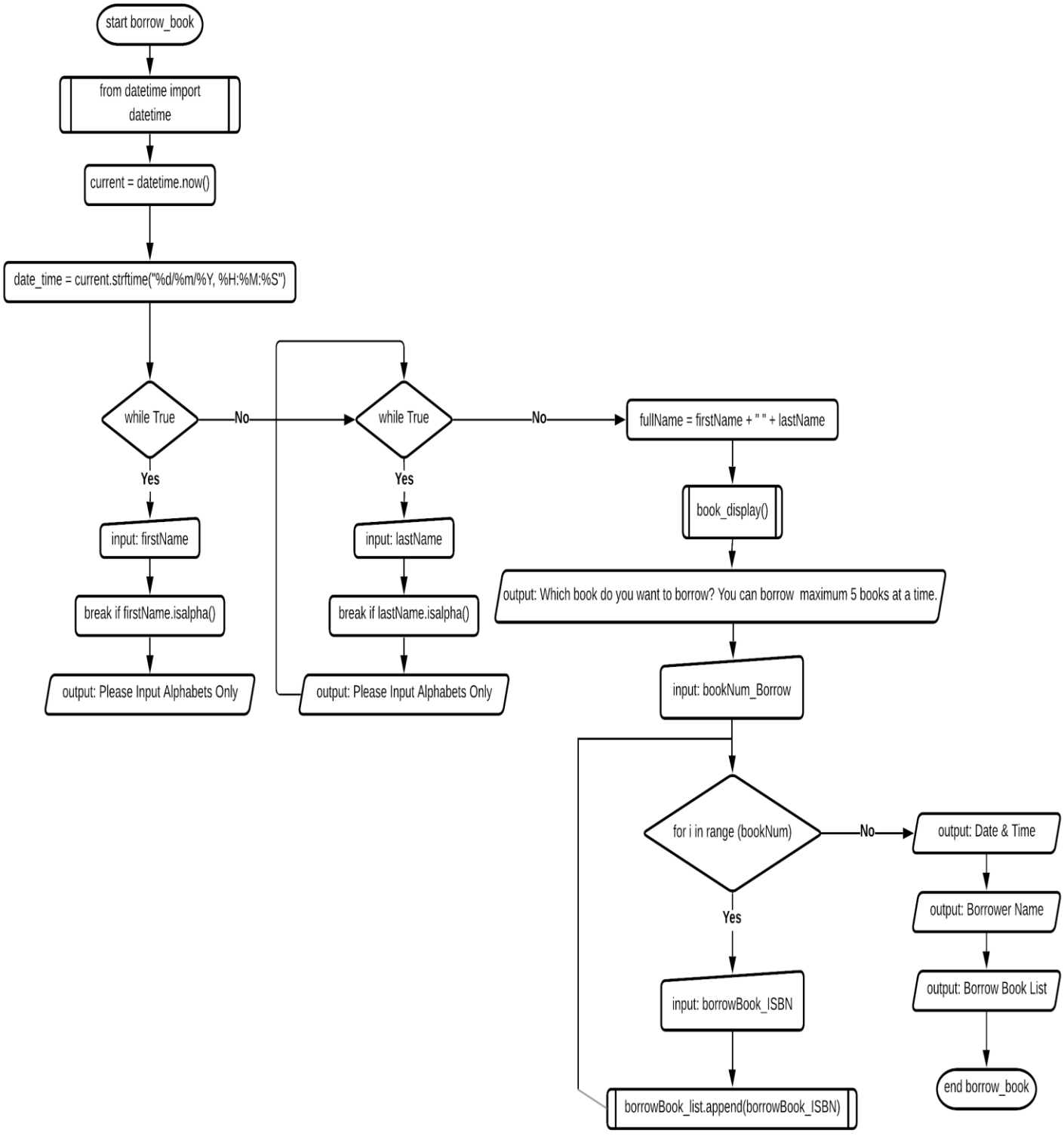

Figure: Borrow Book Flowchart

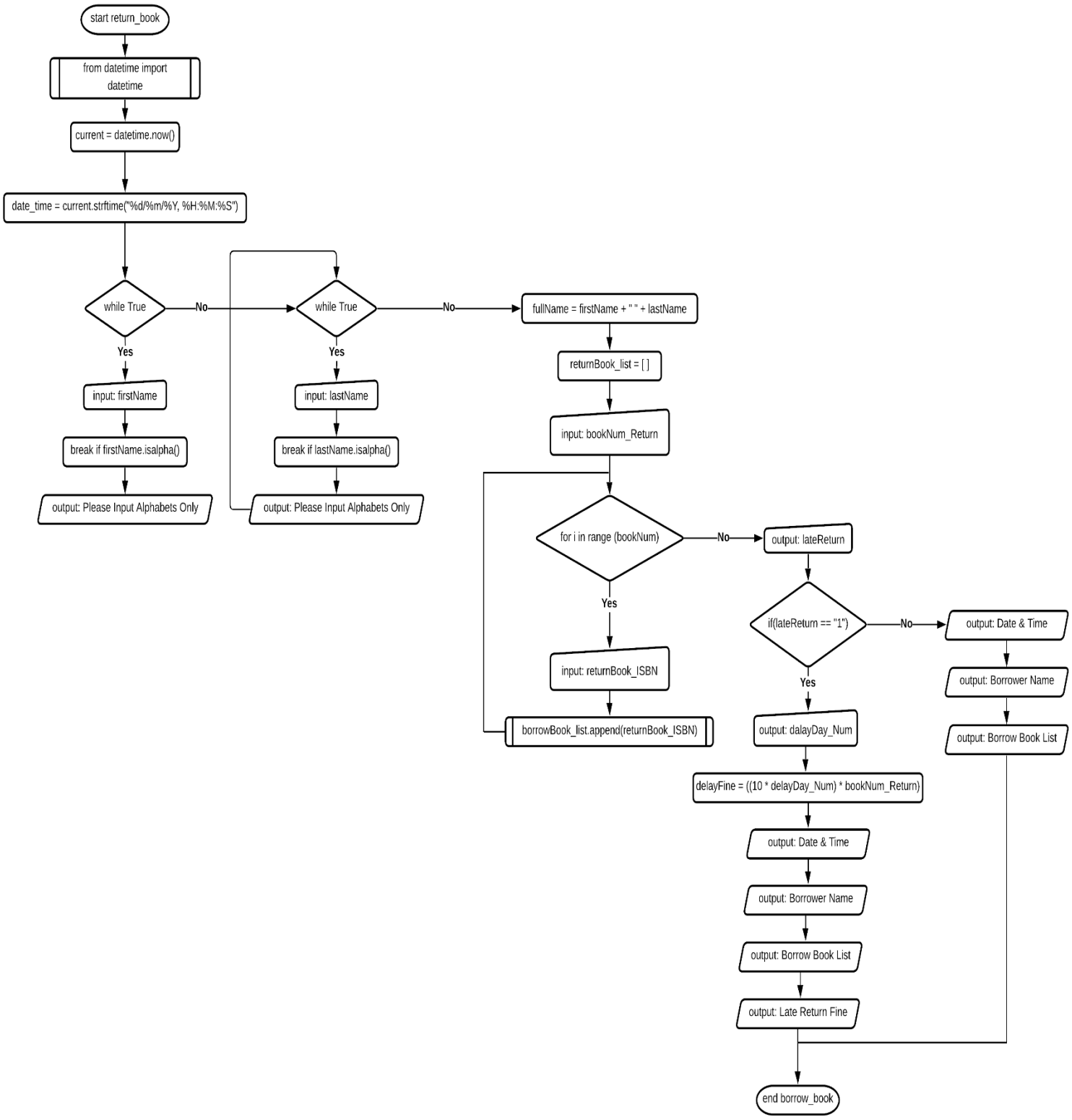

Figure: Return Book Flowchart

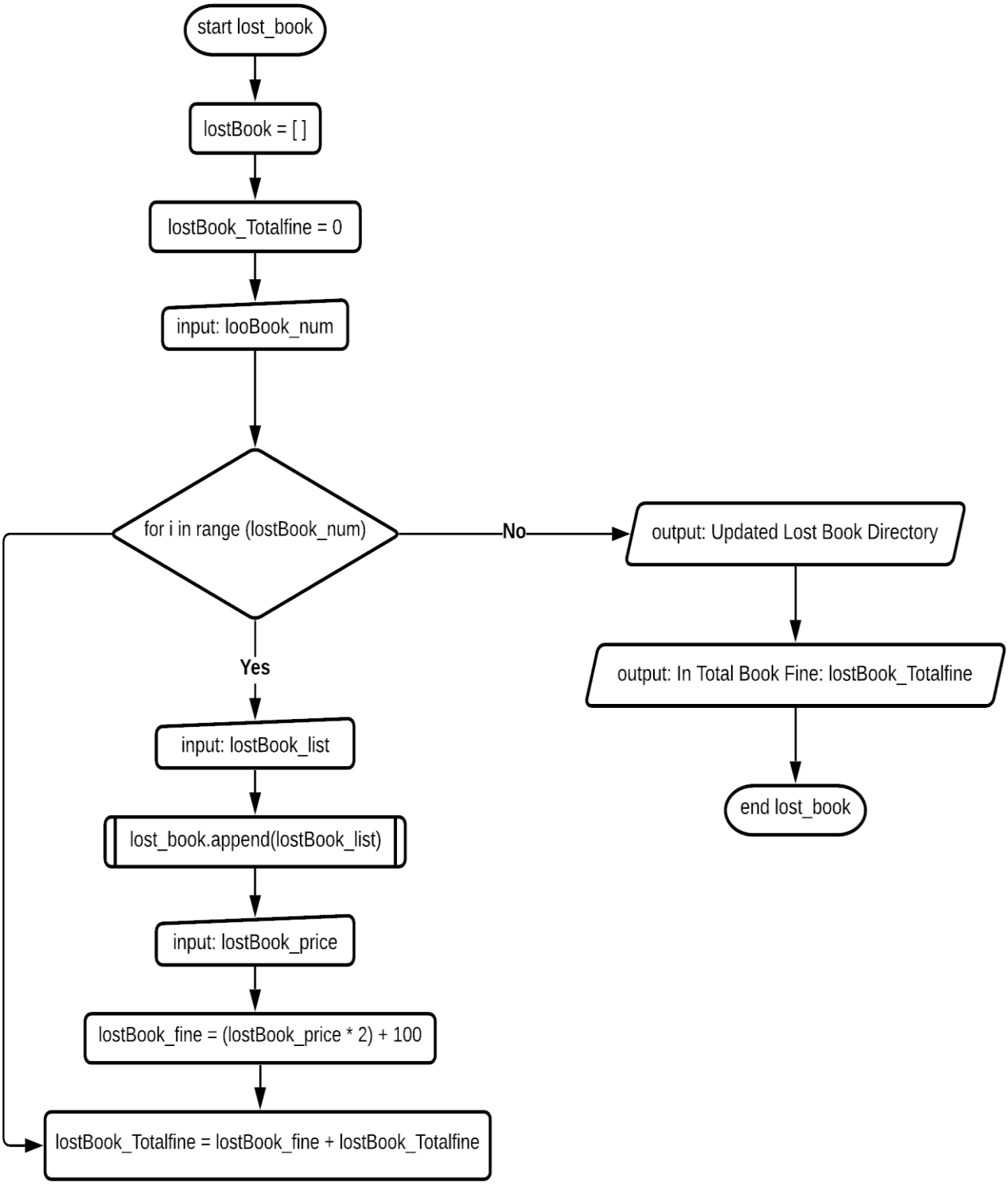

Figure: Lost Book Report

References

- https://www.programiz.com/python-programming/datetime
- https://www.w3schools.com/python/ref_string_replace.asp
- https://www.w3schools.com/python/python_try_except.asp
- https://www.w3schools.com/python/python_regex.asp
- https://gist.github.com/theanam/d3092a80715bd5c9297a9f6776dba241
- https://docs.python.org/3/library/re.html
- https://www.tutorialspoint.com/password-validation-in-python
- https://interactivechaos.com/en/educational-resources/python-functions?title=&field_libreria_target_id%5B%5D=134
- https://pypi.org/project/isbntools/
- https://www.geeksforgeeks.org/searching-books-with-python/
- https://www.bookbrowse.com/reading_guides/title/index.cfm/fuseaction/books
- https://www.kite.com/python/answers/how-to-extract-integers-from-a-string-in-python
- https://www.kite.com/python/answers/how-to-extract-integers-from-a-string-in-python
- https://colab.research.google.com/github/computationalcore/introduction-to-python/blob/master/notebooks/4-files/PY0101EN-4-1-ReadFile.ipynb
- https://colab.research.google.com/github/Shaam93/Building-a-classifer-with-Pytorch/blob/master/Uploading_Data_to_Google_Colab.ipynb#scrollTo=TUVdIxINrxsf
- https://www.lucidchart.com/pages/flowchart-symbols-meaning-explained