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**COLLEGE OF COMPUTING AND INFORMATION SCIENCES**  
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**GROUP COURSE WORK**

**COURSE UNIT : PRINCIPLES OF PROGRAMMING LANGUAGES**  
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# TECHNICAL SPECIFICATION

## CINEMAX MANAGER

**01/10/2018**

**Version 1.0.0**

REVISION HISTORY		
DATE	VERSION	DESCRIPTION
01/10/2018	1.0.0	Primary Project Specification

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## INTRODUCTION

### PURPOSE OF THIS DOCUMENT

This document documents the design guidelines, required and delivered features, setup, project dependencies, and a brief overview of the entire application. Completing this document should mean that a reader is well versed with the system's functionality and requirements, and should also be proficient at using the system. This document is intended to be read with each section independent of any other, so one should feel free to skip through or to any section they would like.

### INTENDED AUDIENCE

This document is primarily for developers and testers, but particular sections can be referred to by several other personnel. The relevant sections for each personnel are described below;

Personnel	Primary Sections
Developers	Description System features Requirements of external interface
Testers	Description System features Requirements of external interface Additional non-functional requirements
Marketing	Description System features Additional non-functional requirements
Users	Introduction System features

## PROJECT SCOPE

### Project Description

The management of Cinemax Theater lacks an efficient and straightforward way to manage their theater seating. The current manual approach they take is often error prone, makes accountability difficult, and can only be used by a single person at a time. Cinemax Manager was built with these issues in mind and sets out to solve them with a simple, intuitive Cinema Seating management application.

### Project Objectives

- Provide an efficient way of managing Cinemax's seat booking process
- Provide a product that allows for multiple users
- Build a product that makes user accountability easy
- Provide Cinemax customers with several convenient features that make booking and buying a seat easy and straightforward

## **Corporate goals and strategies**

The product will support the company's goals, and in particular help the company with;

- Improving customer retention
- Improving accountability in the organization
- Providing customers with variety- more features and options when reserving and purchasing seats
- Record keeping and management. The product will help the business track income and several other indicators

# DESCRIPTION

## FEATURES

The application will be used by management of Cinemax theater to assign and book seats, and sell tickets for performances.

The cinema has 16 rows, with 20 seats in each row. The seats at the mid-column (number 5 to 15) of the last 2 rows closest to the doors (row A and B) are Twin seats, which will be sold in pair, side by side (e.g., buy A5 means paying for both A5 and A6). The rest of the seats in the row A and B, and all seats in row C to F are Very VIP (VVIP) seats. Row G to L are VIP seats, and row M to Z are Economy seats.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
D	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
E	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
F	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
G	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
H	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
I	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
J	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
K	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
L	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
M	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
N	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
O	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
P	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

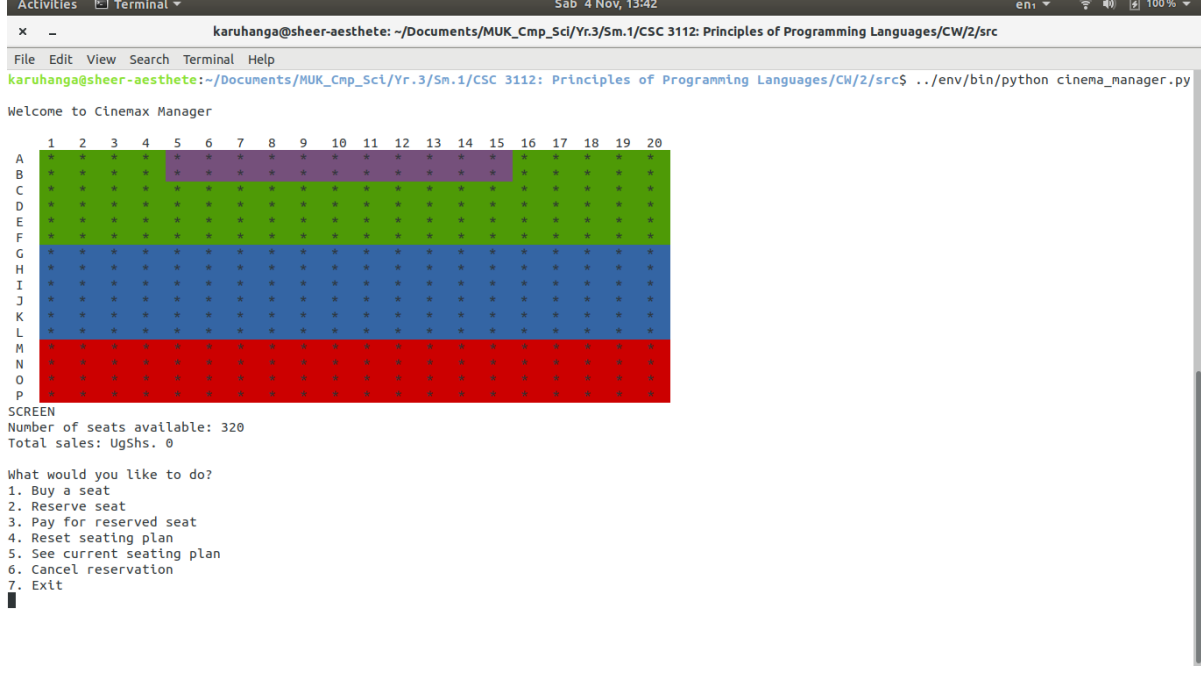
Fig 1: Map of the theater

## CONSTRAINTS: IMPLEMENTATION / DESIGN

The application will be command line based

# SYSTEM FEATURES

## Application starting screen

<b>DESCRIPTION AND PRIORITY</b>	<p>Starting the application brings the user to this screen. Selecting an option indicates to the user which option was selected and switches to that action</p>
<b>FUNCTIONAL REQUIREMENTS</b>	<p>Should present a clean intuitive menu which clearly guides a user on where to find whatever they might be interested in</p>
<b>FEATURE LAYOUT</b>	 <pre> Activities  Terminal  Sab 4 Nov, 13:42  en1  100% x  -  karuhanga@sheer-aesthete: ~/Documents/MUK_Cmp_Scl/Yr.3/Sm.1/CSC 3112: Principles of Programming Languages/CW/2/src File Edit View Search Terminal Help karuhanga@sheer-aesthete:~/Documents/MUK_Cmp_Scl/Yr.3/Sm.1/CSC 3112: Principles of Programming Languages/CW/2/src\$ ../env/bin/python cinema_manager.py  Welcome to Cinemax Manager    1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 A  * * * * * B  * * * * * C  * * * * * D  * * * * * E  * * * * * F  * * * * * G  * * * * * H  * * * * * I  * * * * * J  * * * * * K  * * * * * L  * * * * * M  * * * * * N  * * * * * O  * * * * * P  * * * * *  SCREEN Number of seats available: 320 Total sales: UgShs. 0  What would you like to do? 1. Buy a seat 2. Reserve seat 3. Pay for reserved seat 4. Reset seating plan 5. See current seating plan 6. Cancel reservation 7. Exit   </pre>

## Buy a seat

<b>DESCRIPTION AND PRIORITY</b>	<p>Selecting the buy seat option should take the use to the process of buying a seat, where the user will indicate the category/ type of seat and the number of seats required. The user should also be prompted as to whether or not they would like to make another purchase when a particular purchase is complete</p>
---------------------------------	---

## FUNCTIONAL REQUIREMENTS

## FEATURE LAYOUT

```
Activities Terminal karuhanga@sheer-aesthete: ~/Documents/MUK_Cmp_Sci/Yr.3/Sm.1/CSC 3112: Principles of Programming Languages/CW/2/src
File Edit View Search Terminal Help
P1. P2. P3. P4. P5. P6. P7. P8. P9. P10. P11. P12. P13. P14. P15. P16. P17. P18. P19. P20.
Economy seats are UgShs. 20000 each.

Choose seat: M1
Selected seats: M1. M2. M3. M4. M5. M6. M7. M8. M9. M10. M11. M12.
Payment done.

Would you like to buy more seats?:
1. Yes
2. No
1

Buy seats:
Desired seat category:
1. Economy
2. VIP
3. VVIP
4. Twin
4
Enter number of couples: 3

Available seats:
A5. A6. A7. A8. A9. A10. A11. A12. A13. A14. A15.
B5. B6. B7. B8. B9. B10. B11. B12. B13. B14. B15.
Twin seats are UgShs. 25000 each.

Choose seat: A5
Selected seats: A5. A6. A7. A8. A9. A10.
Payment done.

Would you like to buy more seats?:
1. Yes
2. No
2

Enter number of seats required: 12

Available seats:
M1. M2. M3. M4. M5. M6. M7. M8. M9. M10. M11. M12. M13. M14. M15. M16. M17. M18. M19. M20.
N1. N2. N3. N4. N5. N6. N7. N8. N9. N10. N11. N12. N13. N14. N15. N16. N17. N18. N19. N20.
O1. O2. O3. O4. O5. O6. O7. O8. O9. O10. O11. O12. O13. O14. O15. O16. O17. O18. O19. O20.
P1. P2. P3. P4. P5. P6. P7. P8. P9. P10. P11. P12. P13. P14. P15. P16. P17. P18. P19. P20.
Economy seats are UgShs. 20000 each.

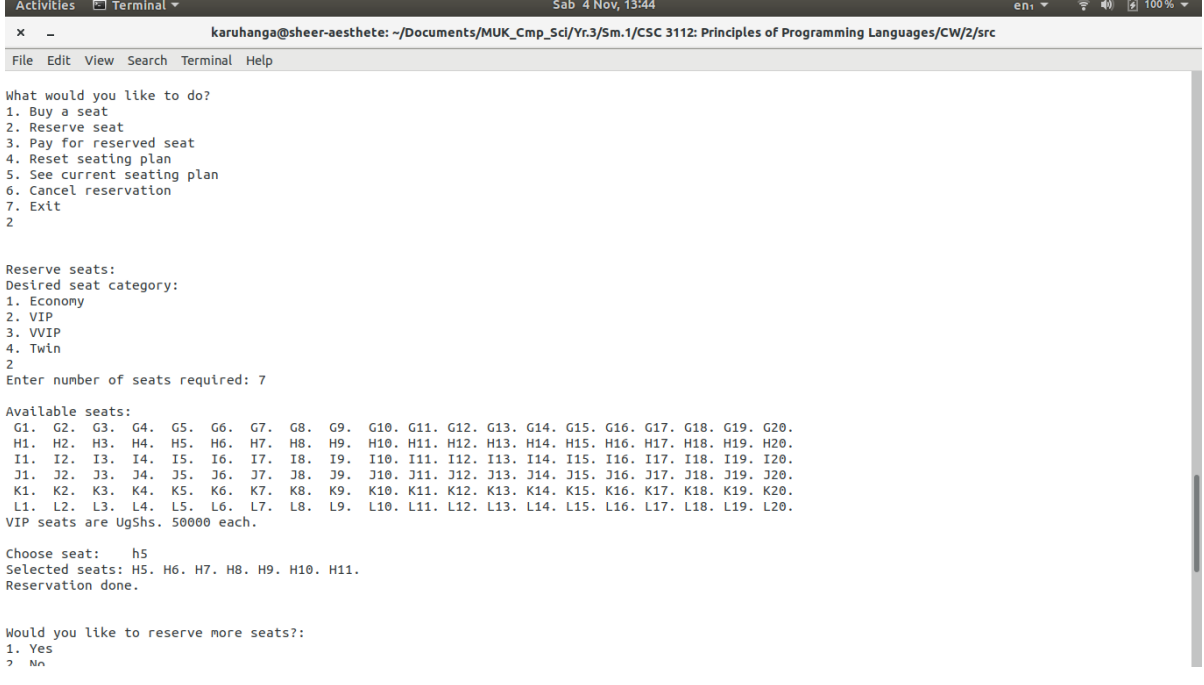
Choose seat: M1
Selected seats: M1. M2. M3. M4. M5. M6. M7. M8. M9. M10. M11. M12.
Payment done.

Would you like to buy more seats?:
1. Yes
2. No
```

## Buy twin seats



## Reserve seats

<b>DESCRIPTION AND PRIORITY</b>	Selecting the reserve seat option should take the use to the process of reserving a seat, where the user will indicate the category/ type of seat and the number of seats required. The user should also be prompted as to whether or not they would like to make another reservation when a particular reservation is complete
<b>FUNCTIONAL REQUIREMENTS</b>	Should allow a user to reserve a single/ number of seats and properly record the reservation in the system Only free seats can be reserved
<b>FEATURE LAYOUT</b>	 <pre>Activities  Terminal  Sab 4 Nov, 13:44  en1  100% x  karuhanga@sheer-aesthete: ~/Documents/MUK_Cmp_Sci/Yr.3/5m.1/CSC 3112: Principles of Programming Languages/CW/2/src File Edit View Search Terminal Help  What would you like to do? 1. Buy a seat 2. Reserve seat 3. Pay for reserved seat 4. Reset seating plan 5. See current seating plan 6. Cancel reservation 7. Exit 2  Reserve seats: Desired seat category: 1. Economy 2. VIP 3. VVIP 4. Twin 2 Enter number of seats required: 7  Available seats: G1. G2. G3. G4. G5. G6. G7. G8. G9. G10. G11. G12. G13. G14. G15. G16. G17. G18. G19. G20. H1. H2. H3. H4. H5. H6. H7. H8. H9. H10. H11. H12. H13. H14. H15. H16. H17. H18. H19. H20. I1. I2. I3. I4. I5. I6. I7. I8. I9. I10. I11. I12. I13. I14. I15. I16. I17. I18. I19. I20. J1. J2. J3. J4. J5. J6. J7. J8. J9. J10. J11. J12. J13. J14. J15. J16. J17. J18. J19. J20. K1. K2. K3. K4. K5. K6. K7. K8. K9. K10. K11. K12. K13. K14. K15. K16. K17. K18. K19. K20. L1. L2. L3. L4. L5. L6. L7. L8. L9. L10. L11. L12. L13. L14. L15. L16. L17. L18. L19. L20. VIP seats are UgShs. 50000 each.  Choose seat: h5 Selected seats: H5. H6. H7. H8. H9. H10. H11. Reservation done.  Would you like to reserve more seats?: 1. Yes 2. No</pre>

## Make a payment for a reserved seat

<b>DESCRIPTION AND PRIORITY</b>	Selecting the Pay for Reserved seat option should allow a user to select the reserved seat that is being reserved and properly record this reservation Only reserved seats can be paid for
---------------------------------	---

## FUNCTIONAL REQUIREMENTS

The selected seat should be paid for and the payment properly recorded

## FEATURE LAYOUT

```

Activities  Terminal  Sab 4 Nov, 13:45  eni  100%
x  -  karuhanga@sheer-aesthete: ~/Documents/MUK_Cmp_Sci/Yr.3/Sm.1/CSC 3112: Principles of Programming Languages/CW/2/src

File Edit View Search Terminal Help
O
P
SCREEN
Number of seats available: 296
Total sales: UgShs. 390000

Done.

What would you like to do?
1. Buy a seat
2. Reserve seat
3. Pay for reserved seat
4. Reset seating plan
5. See current seating plan
6. Cancel reservation
7. Exit
3

Make payment
Reserved seats:
H5. H6. H8. H9. H10. H11.

Select seat: H8
Done.

What would you like to do?
1. Buy a seat
2. Reserve seat
3. Pay for reserved seat
4. Reset seating plan
5. See current seating plan
6. Cancel reservation
7. Exit

```

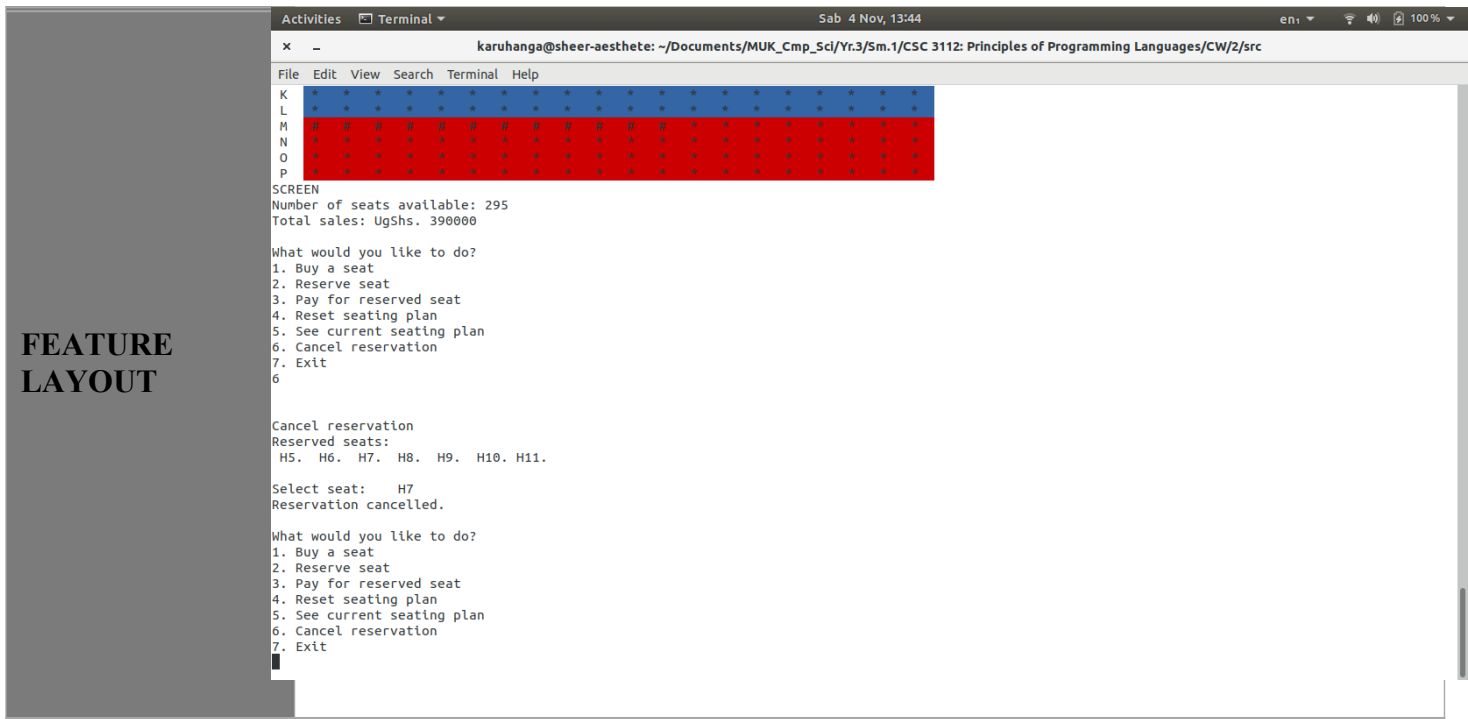
## Cancel reservation

### DESCRIPTION AND PRIORITY

Selecting the cancel reservation option should allow the user to cancel a previously made reservation  
Only reserved seats should be able to be canceled

### FUNCTIONAL REQUIREMENTS

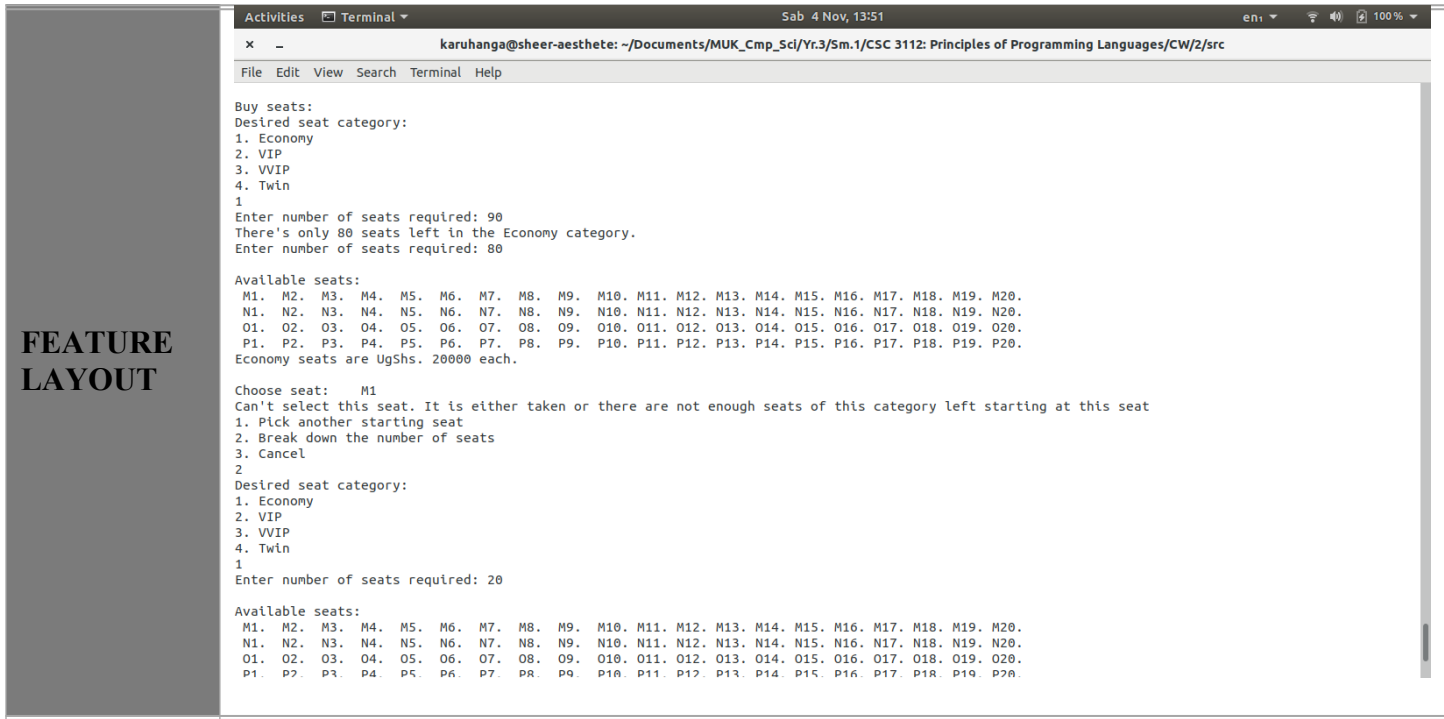
The cancellation should be properly recorded



## FEATURE LAYOUT

### Not enough seats

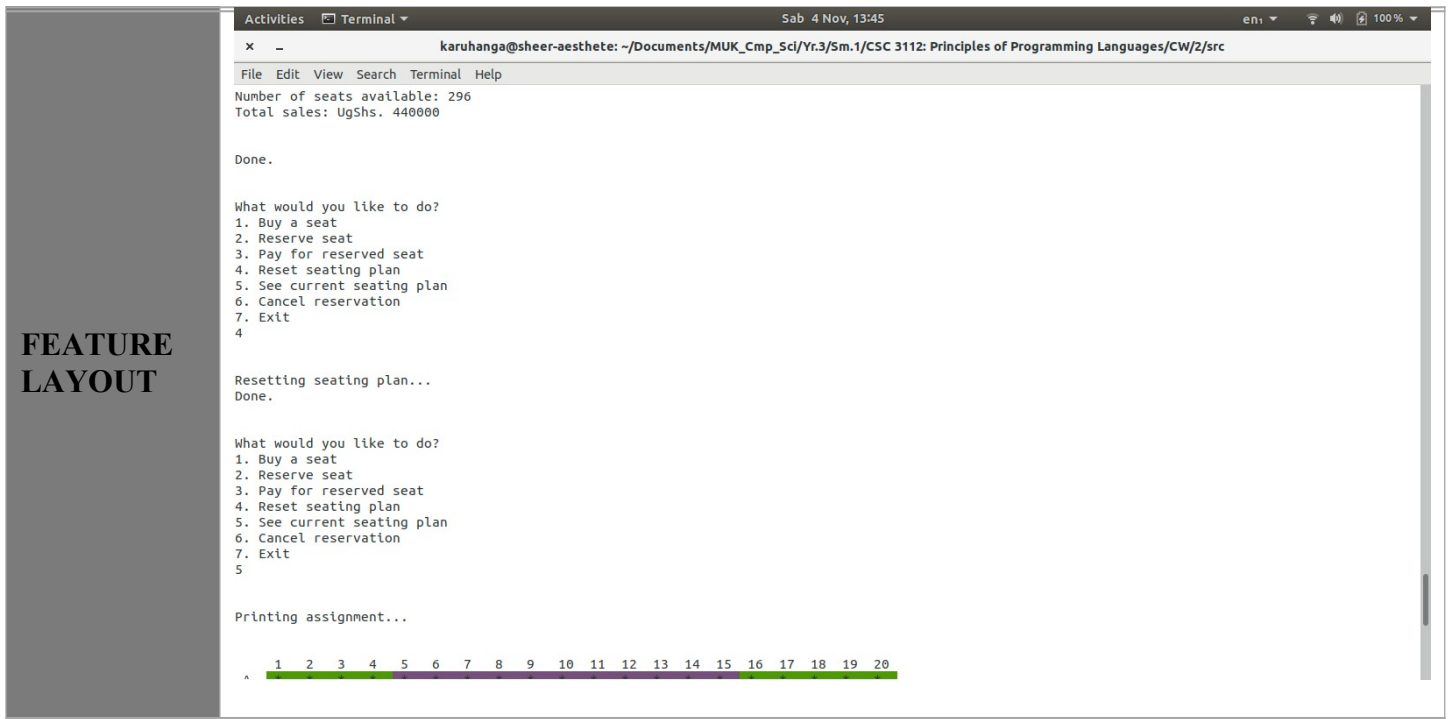
<b>DESCRIPTI ON AND PRIORITY</b>	<p>The application should not allow purchase or reservation of seats that have already been purchased</p>
<b>FUNCTION AL REQUIREM ENTS</b>	<p>The application should indicate to the user that not enough seats are left when they attempt to reserve or purchase unavailable seats</p>



## FEATURE LAYOUT

### Reset seating plan

DESCRIPTI ON AND PRIORITY	The application should allow the user to reset the seating plan whenever they would like to
FUNCTION AL REQUIREM ENTS	The application should reset and properly mark all seats as unreserved



## FEATURE LAYOUT

### Display current seating assignment

<b>DESCRIPTI ON AND PRIORITY</b>	<p>The application should properly print out the current seating arrangement for the theater when this option is chosen as well as the number of available seats and amount made from sales so far</p>
<b>FUNCTION AL REQUIREM ENTS</b>	<p>The application should keep track of all this information and print it out on request</p>

## FEATURE LAYOUT

```

Activities Terminal Sab 4 Nov, 13:45 en 100%
x - karuhanga@sheer-aesthete: ~/Documents/MUK_Cmp_Scl/Yr.3/Sm.1/CSC 3112: Principles of Programming Languages/CW/2/src
File Edit View Search Terminal Help
Printing assignment...

  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20
A   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
B   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
C   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
D   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
E   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
F   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
G   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
H   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
I   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
J   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
K   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
L   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
M   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
N   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
O   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
P   *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

SCREEN
Number of seats available: 296
Total sales: UgShs. 440000

Done.

What would you like to do?
1. Buy a seat
2. Reserve seat
3. Pay for reserved seat
4. Reset seating plan
5. See current seating plan
6. Cancel reservation
7. Exit

```

# **REQUIREMENTS OF EXTERNAL INTERFACE**

## **USER INTERFACES**

The application will be command line based.

## **HARDWARE INTERFACES**

The application can properly function on both x86 and x64 computer systems.

## **SOFTWARE INTERFACES**

The application is built in the python programming language and requires that the language be installed before running the program.

Python was chosen as the language of implementation because;

- It makes it easy to express ideas
- It is fast to build applications in the language
- It easy to maintain the application in the future because of its high readability
- The team had the most collective experience in building products in the language

## **ADDITIONAL NONFUNCTIONAL REQUIREMENTS**

### **PERFORMANCE**

The application should respond quickly to user input and should be responsive at all times.

### **SECURITY**

The application should only allow access to authorized users.

### **SOFTWARE QUALITY**

The application should adhere to the requirements set out in the specification document and should be properly tested to ensure that it meets this specifications.