# Chapter Two: Design

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## 2.1 Introduction

The design objectives for my game will be based upon the interviews conducted on the stakeholders and are similar to the requirements already specified. I will create a list of design requirements that will be implemented into the game. For the general design of the game, all of the stakeholders were fine with it being a 2D shooter and most liked the space theme. The game will be designed in Python, using the pygame module for the game and tkinter for the login window.   
To demonstrate the interfaces to the users, I will design them digitally and show it to them. I will then collect feedback from this and implement the feedback.

## 2.2 Decomposition of the problem

I have decided to split my project into four main sections, the login window, the login database, the main game screen and the scoring system. I will later expand upon this main decomposition diagram by going into more depth with each of these sections and give them each a more detailed diagram.   
I have broken the problem down into a top-down design because it will allow me to develop each of the sections as separate modules or functions. This will make testing easier later on.

### 2.2.1 Decomposition Diagram

1. Main top-down diagram:

Space Game

Login

Scoring system

Actual game

Database

1. Login diagram:

Login

Admin login window

User login window

1. Game diagram:

Actual game

Settings screen

2-player Gameplay

Game over screen

Main menu

Single-player Gameplay

### 2.2.2 Data Flow Diagram

Login data flow diagram:

### 2.2.3 Input Process Output

## 2.3 How All Solution Parts are Linked

### 2.3.1 State Diagram of the different forms/parts

### 2.3.2 How different functions /classes are connected

## 2.4 Database Design

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### 2.4.1 Normalisation

### 

### 2.4.2 Data Dictionary

### 2.4.3 Entity Relationship Diagram

### 2.4.4 SQL Pseudocode

## 2.5 Design of Main Parts of the Solution

2.5.1 Part ONE:

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### 2.5.1.2 Form Design and Layout

### 2.5.1.2 Justification of Validation rules

### 2.5.1 .3 Algorithms and PseudoCode

### 2.5.1.4 Key Variables/Data Structures /Classes

### 2.5.1.5 Test Plan for PART ONE

2.5.2 Part TWO:

### 2.5.2.1 Form Design and Layout

### 2.5.2.2 Justification of Validation rules

### 2.5.2. 3 Algorithms and PseudoCode

### 2.5.2.4 Key Variables/Data Structures /Classes

### 2.5.1.5 Test Plan for PART TWO

2.5.3 Part THREE:

### 2.5.3.1 Form Design and Layout

### 2.5.3.2 Justification of Validation rules

### 2.5.3. 3 Algorithms and PseudoCode

### 2.5.3.4 Key Variables/Data Structures /Classes

### 2.5.1.5 Test Plan for PART THREE

2.5.4 Part FOUR:

### 2.5.4.1 Form Design and Layout

### 2.5.4.2 Justification of Validation rules

### 2.5.4. 3 Algorithms and PseudoCode

### 2.5.4.4 Key Variables/Data Structures /Classes

### 2.5.1.5 Test Plan for PART FOUR

## 2.6 Stakeholders involvement

## 2.7 Testing plan to inform evaluation