**CRM Software Solution**

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| Acme Company |
| Software Project |
| C188 Performance assessment |

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| Andrew Morgan  9-28-2023  Version 2.0 |

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# Introduction

The American Video Game Company (AVGC) is looking to update its customer relationship management (CRM) system because of increased growth and obsolete and convoluted processes. The system will be designed to collect and consolidate contact and business data along with other requirements they have outlined.

# A.1. Purpose Statement

The purpose of this document is to propose a software solution for a new CRM system that AVGC can use to manage customer relationships and other business data.

# A.2. Overview of the Problem

AVGC has experienced 42% growth in the last two years and is outgrowing its current system. With this new increase in demand, the company has realized that its current system for managing its customer and business data is convoluted, inefficient, and obsolete. Furthermore, they don’t want to lose their reputation for high customer satisfaction and want to maintain their position in the gaming industry.

# A.3. Goals and Objectives

There are several goals the proposed CRM software solution needs to meet. The CRM system will provide AVGC with the ability to take all the contact and business data gathered throughout AVGC, put it into a database, and make it accessible via a user-friendly GUI. Also, the system will need to have the ability to do reporting, sales tracking, and contact management. All this needs to be done in such a way that the system is secure, scalable, and easy to maintain.

To accomplish these goals, the proposed CRM system has several objectives:

* Integrate with AVGC’s active directory server.
* Archive information without deletion to maintain historical records.
* Accurately control data access, workflow, and editorial control based on user permissions.
* Maintain versions of records with auditing, workflow, and roll-back.
* Be compatible with several different web browsers and operating systems.
* Integrate with the company’s current infrastructure.
* Perform activity management, opportunity management, quoting, forecasting, order management, and contracting to meet the sales tracking goal.
* Deliver both predefined and custom reports on all the data.

# A.4. Prerequisites

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| Number | Prerequisite | Description | Completion Date |
| 1 | Internet | The company’s internet connection should have a download speed of at least 100 MBPS and an upload speed of 25 MBPS. | 9/12/2024 |
| 2 | Server | The server that will be holding the data for the system should be able to hold at least 32 GB RAM. | 9/12/2024 |
| 3 | Workstation | All PCs on the system must be running Windows 11 or above. | 9/12/2024 |

# A.5. Scope

The following are within the scope of the proposed CRM solution:

* The proposed solution will provide software that will take all the contact and business data gathered throughout AVGC, put it into a database, and make it accessible via a user-friendly GUI.
* The data will be able to be edited and added to, and deletion will be implemented via hard and soft delete.
* Access to data and editorial controls will be implemented via permissions and roles.
* The system will be able to integrate with other systems as well as AVGC’s current infrastructure.
* The solution will be designed for future enhancement and scalability.
* Security will be built in at every level of the proposed CRM system.

The following are NOT within the scope of the proposed CRM solution:

* The proposed solution does not support Mac or any other Apple products except for Safari 16.5 and IOS17.
* The proposed system will be designed without using off-the-shelf or 3rd party software. Everything will be custom designed for AVGC.
* Hosting using a 3rd party cloud-based solution is also not within the scope of the proposed solution currently, and the CRM solution will run off the company’s own infrastructure.

# A.6. Environment

The following IT hardware and software will comprise the environment that the CRM system will be deployed in:

* latest Chrome and Chromium
* latest Firefox
* I.E 9 and above
* Safari 16.5
* mobile & tablet
* iOS17 Safari
* iOS17 Third Party Browsers (Chrome and Firefox)
* Android 13.0 Chrome
* Windows 10 and above
* SQL Server 2022
* Cisco UCS C240 M7 Rack Server

# Requirements

The American Video Game Company has specified several requirements for its CRM system that we hope to meet. In this section, we’ll go over the requirements for opportunity management, performance, hard and soft delete, security, and data management. We will be sure to design the system around these and other requirements, paying close attention to the Technical and Functional requirements as well as any expectations AVGC may have for their CRM system.

# Business Requirements

The proposed CRM system needs to play a role in opportunity management, which means that the system needs to be able to track sales processes, manage pipelines, and do competitive analysis. To do this, the proposed system will have the capability to implement workflow and activities for the sales process as well as establish and track the pipeline. Also, it will be able to perform win/loss analysis, competitive analysis, competitive product analysis, and discount approval and analysis.

# User Requirements

AVGC currently has around 2000 users and the proposed CRM system needs to be able to handle up to 500 of these users at once while maintaining a high level of performance. However, over time the number of these users will change, and the system needs to be scalable to maintain performance standards. To do this the proposed CRM system will have a robust server system, network infrastructure, and a high internet speed to maintain a sustainable uptime.

# Functional Requirements

The system needs to have the ability to perform hard and soft delete operations on the database. The proposed CRM system will accomplish this by completely removing data from the system when a hard delete function is performed and restricting this ability to only specific roles. Also, when the proposed CRM system performs a soft delete function, data will only be removed from view and not the entire system.

# NonFunctional Requirements

The proposed CRM system needs to be secure and should include multiple security factors to prevent a threat from exploiting vulnerabilities in the system. Data needs to be kept confidential and permissions should be put in place to restrict access only to individuals with specific roles. The proposed CRM system will provide role-based access control within the system along with multifactor authentication.

All data must be housed within the U.S. and must not leave the country unless authorization has been given. The proposed CRM system will have a central data center within the United States that will store this information, and controls will be put in place to prevent data from crossing the U.S. border without permission.

# Software Development Methodology

The waterfall methodology consists of several sequential steps where one step is fully completed before another. These steps include requirements gathering, design, implementation, verification, deployment, and maintenance.

Agile is a set of guidelines that involves working through a project iteratively with an emphasis on consistent collaboration and improvement.

# Advantages of the Waterfall Methodology

* The waterfall method is a predictive development model where all planning is done before any work is accomplished. This means that AVGC will know exactly what they are getting before the project is implemented and avoid wasting time and money on development paths that end up going nowhere.
* Because everything will be planned out in detail ahead of time with a perspective on the whole, it would be possible to design the system with a focus on making it consistent and easy to maintain.
* If the development design is complete and has nothing wrong with it, very little time would be wasted making decisions later in development. This makes programming go faster.
* The waterfall methodology and other predictive models place greater emphasis on documentation than other development models.

# Disadvantages of the Waterfall Methodology

* The waterfall method is very inflexible. Since **all** planning takes place before implementation, it is very hard to make any changes to the project later in development.
* It requires a late release date. In other methodologies, the software will get deployed before it is fully developed, but in the waterfall method, you must wait until it is fully completed before any software is released.
* There is a lot of design at the beginning. This causes a problem since those involved later in the development process will be idly waiting for all the details of the project to be figured out.

# Advantages of Agile

* It is very flexible and highly adaptive when it comes to change. If, for whatever reason, requirements need to be changed during development, then it is not difficult to move forward.
* Agile encourages constant collaboration with stakeholders. This results in high consumer satisfaction since stakeholders will be a part of the development process and be able to provide frequent input.
* There is very little design up front. This avoids some of the problems mentioned in C.2.

# Disadvantages of Agile

* Agile tends to encourage changes during any phase of a project especially if it is large and complex. Since changes can occur frequently throughout the life of an Agile project, deadlines can be moved back just as often, causing the project to take longer than originally expected.
* The overall scope of the project can get bigger than originally intended, causing confusion about what to prioritize. This can happen as requirements evolve over the course of the project.
* There is typically a lack of documentation in the Agile methodology and other adaptive methods, and developers can get confused about the specifics of a project.

# Best Suited

I believe the waterfall methodology would be the best development process for AVGC’s CRM system. AVGC has already chosen this model, and I do not see a big enough reason to change it. The Waterfall method has all the design upfront, and this will make the later steps easier to implement, lead to fewer bugs throughout the process, and diminish overall cost to the company. Furthermore, AVGC wants the CRM system to be easily maintained. Because Waterfall plans every detail early on, AVGC will be able to design the system with maintainability in mind and provide for easy maintenance.

# Design

* The process for logging in will be a straightforward logical design demonstrated by a flowchart.
* The design will have a database that will consolidate contact and business information as well as store data on product, order, and customer information. A part of the database will be demonstrated using an ERD.
* The design for the proposed CRM system will include a user-friendly GUI that will be easy and straightforward to use. A portion of it will be illustrated using a GUI mock-up.

# Login Flowchart

The following diagram describes the login process of the CRM system. When the system begins, the user will need to input a username and password. After that, the system will verify if these credentials are in the database and navigate to the landing page or display a login error.

A diagram of a computer program

Description automatically generated

Figure 1: Flowchart

# Contact and Order ER diagram

The ERD below lays out the entities of the database with relationships between contacts and orders. This includes the relationship between a business and a contact as well as the relationships between contact information, customers, and stakeholders. The ERD also shows the relationship between customers, orders, and products. A diagram of a business

Description automatically generated

Figure : Database

# Customer Information GUI Mock-up

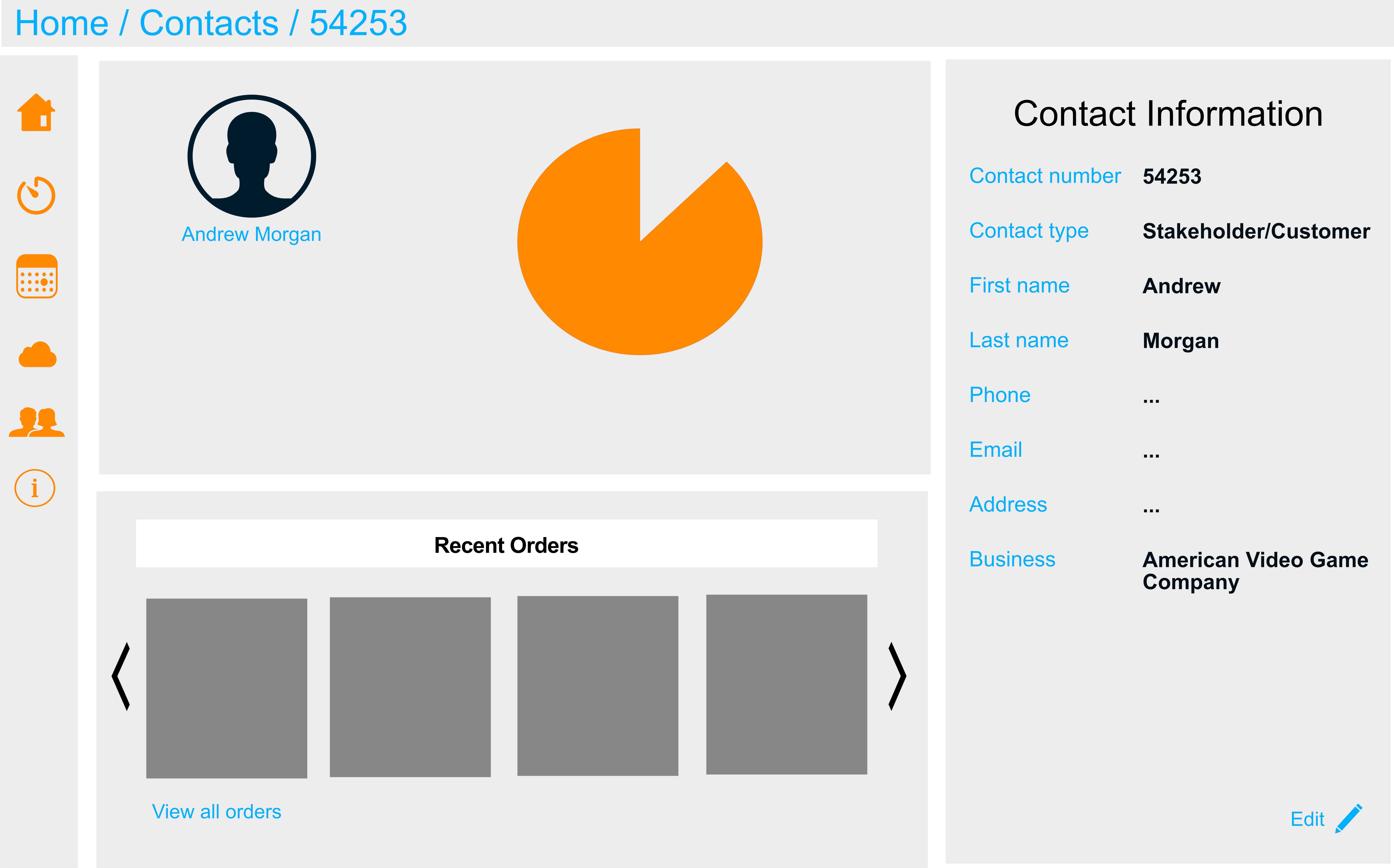
The following displays a GUI mock-up of a page with information on a specific customer. This data includes the customer's order activity, some analysis, and contact information. Also, the page contains several navigational features.



A black background with a black square

Description automatically generated with medium confidence





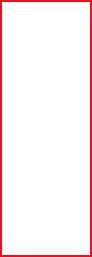


Figure 3: GUI mock-up

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| GUI Control Mapping | | | |
| ID | Control | Property | Data Source |
| 1 | Image link | Clicking any of these icons will guide the user to a new page. These icons include home, report dashboard, calendar, cloud resources, contacts, and helpful information. | Internal Variable |
| 2 | Label link | Displays the path the user has taken and provides more navigation functionality. | Internal Variable |
| 3 | Image link | Displays four of the customer’s most recent purchases and the ability to scroll through up to 12 orders. | Internal Variable |
| 4 | NA | Provides useful analytical information on the customer. | External Variable |
| 5 | NA | Displays contact information on the customer. | External Variable |
| 6 | Image/label link | Navigates to the contact information form so that the customer’s contact information can be edited. | Internal Variable |
| 7 | Label link | Navigates the user to a page where all the customer’s orders can be viewed. | Internal Variable |
| 8 | Window termination button | Closes the app when clicked | Internal Variable |
| 9 | Window maximization button | Maximizes the app’s window when clicked | Internal Variable |
| 10 | Window minimization button | Minimizes the app’s window when clicked | Internal Variable |
| 11 | NA | Displays the profile picture and name of the customer. | External Variable |

# Testing

* **Compatibility test**. In this test, the tester will test the compatibility of the CRM system with the Windows OS and Chrome browser. The tester will see whether the system can be successfully logged into and if it will load within this environment.
* **Add contact functionality test**. Here we will test the functionality of the system to add a contact. The tester will log on to the system and attempt to create a new contact, adding them to the contact list.
* **Soft delete functionality test**. In this test, the tester will test the functionality of a report to be soft deleted. The tester will log on to the system, navigate to a report, and delete it. They will then check to see if the report was removed from the database.

# Acceptance Testing

During the development process, some tests will need to be run. These will include Acceptance Testing, which is concerned with whether an application meets customer requirements. In this section, we will go over a few tests that will be used to verify the proposed CRM system’s acceptability.

# Compatability Testing

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| The combination of the latest Windows OS and Chrome browser needs to be compatible with the proposed system. |
| A PC needs to have Windows 11 running and Chrome 113 installed. |
| 1. Open Chrome. 2. Navigate to avgc.com. 3. Log into the system. 4. Make sure the home page loads correctly. |
| Once Chrome has been opened and the user has navigated to avgc.com, the tester should be able to log in and load the home page successfully. |
| Pass: the user can open Chrome, navigate to avgc.com, log in, and view the home page successfully. |

# Add Contact Functionality Test

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| The system must be able to add a contact to the contact list and update the database. |
| The database needs to contain test contact data that can be referenced by the system, and the application needs to be able to work with the database. |
| 1. Log onto the system 2. Navigate to the “Contacts” page. 3. Click “Add Contact” and see if the “Add Contact” form loads properly. 4. Input contact information into the form. 5. See if the contact list updates properly. |
| If the test runs successfully, the tester should be able to navigate to the “Contacts” page and the “Add Contact” form. A new contact should be added to the contact list within the system, and the database should be updated with this new contact. |
| Pass: the tester was able to successfully create a new contact and add them to the contact list. The database was updated. |

# Soft Delete Functionality Test

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| The system needs to be able to perform soft delete. |
| The database needs to contain test report data that can be referenced by the system, and the application needs to be able to work with the database. |
| 1. Log into the system. 2. Navigate to the “Reports” page. 3. Select a report and click delete. 4. Verify that the report was removed from the “Reports” page. 5. Exit the system. 6. Open the system’s database software. 7. Verify the report that was removed is still in the database. |
| The soft-deleted report should be removed from view within the system. However, the database should still contain this report. |
| Fail: The report was removed from view within the system application, but it was also removed completely from the database. |