# Scholar Saver

Student Budgeting App

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System Proposal

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CSC 3150 Systems Design

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Executive Summary

Resources for the Responsible Student has hired Big Tech Company to create a mobile application named Scholar Saver. The application will assist college students with budgeting and provide customized resources. The Scholar Saver project has been proposed because of a lack of financial literacy and responsible budgeting behaviors among college students. This document outlines the project's specific objective, requirements, and restraints. The feasibility of this project is also analyzed on several fronts, and the requirements are depicted in a brief model of the system's required use cases.

1.0 Introduction and Overview

## 1.1 Problem Statement

College students have notoriously poor spending habits. From the newfound freedom of spending to the lack of experience with managing personal finances, students frequently find themselves strapped for cash. Students regularly find themselves in loads of debt and struggling to make ends meet throughout their schooling years. While the high-cost situation is partly because of the nature of the educational institutions, there is much room for improvement among students. Bringing assistive budgeting tools and knowledge of financial responsibility is vital to cultivating a prepared and responsible future generation of graduates.

There is a significant lack of budgeting tools tailored to students—including features that help to manage various costs such as tuition, textbooks, and different fees, as well as fluctuating income streams from part-time jobs and financial aid disbursements. Additionally, students need to be introduced to general knowledge and financial literacy sooner. Given this gap, Resources for Striving Students (RSS) has hired Big Tech Company (BTC) to fill it by providing an accessible and comprehensive yet easy-to-use budgeting tool available to students. This tool will provide students with the necessary resources to manage their finances wisely, make informed decisions with their money, and help them be more aware of their ongoing spending and saving habits.

## 1.2 Project Vision and Scope

The vision of Resources for Striving Students (RSS) is to foster a culture surrounding students in higher education that strives for financial responsibility and allows for the use of tools promoting this responsibility to be accessible. This culture will help encourage the growth of a proactive and responsible future generation of laborers. For the successful deployment of this project, we at Big Tech Company (BTC) will build a mobile budget assistance application titled Scholar Saver that will help the student manage his budget well, considering the variety of costs, expenses, and incomes that the student has. This will comprise directly tracking the student’s income and expenses, suggestions for responsible financial decisions, and insights into his regular spending habits. Several tools will be available to assist the student with weekly, monthly, and annual budget tracking and provide him with outside resources to encourage financial proactivity and wisdom.

## 1.3 Requirements Summary

To ensure the success and sustainability of this project, Scholar Saver must meet several requirements, as follows.

* The user's ability to keep their account and financial information secure and private.
* A ‘freemium’ subscription model, with subscriptions available to individuals and institutions.
* The user should be able to easily connect their banking accounts and view related information.
* Have a repository of financial literacy materials available to the user. This comprises books, articles, videos, and other mediums of information.
* Ability to partner directly with academic institutions to provide the premium model with their students as a contract.
* Disclosure of how the application will use the user’s information about their educational costs in compliance with FERPA and GDPR.
* Scholar Saver should increase financial responsibility among students.

## 1.4 Stakeholders and Their Interests

The success of this project will primarily be measured by the benefits it provides to its stakeholders. The main stakeholders are:

* Resources for Striving Students (RSS) is interested in providing tangible benefits to students and profiting from the product.
* This product's end users (students) will be interested in the application’s functional benefit to themselves.
* Big Tech Company (BTC) developers will be interested in producing a quality system that is up to the standards of our client RSS, which will result in a profit for BTC.
* Colleges and universities will be interested in providing their students with resources for financial responsibility.
* Regulatory bodies (FERPA and GDPR) will ensure that Scholar Saver handles the student’s data correctly and in cooperation with their guidelines.

## 1.5 Expected Costs and Benefits

**1.5.1 Business Benefits**

There are many business benefits associated with this project. Most of these benefits are categorized as intangible, as they do not provide a direct monetary value. The business benefits are listed here.

* Another resource owned by RSS can draw people in to explore more of their products.
* Students will benefit from the resources provided and the habits encouraged by the software.
* The cultivation of a mindset to be proactive and responsible can have lasting effects on the incoming workforce.
* Subscription plan fees from individuals and primarily academic institutions provide a return to the product owner (RSS).

**1.5.2 Cost Areas**

Several costs can be attributed to the development and maintenance of this project. These costs are primarily related to the project development and the product maintenance.

* Labor costs for the design and development of the product.
* Deployment of the application to mobile environments.
* Labor costs for software updates and bug fixes present a recurring fee for the maintenance of this project.
* Cloud service costs for storing and securing user data require continual fund allocation.
* Potential costs for financial literacy resources.
* Labor costs to provide customer service to end users.

## 1.6 Constraints

The following are some limitations to the initial deployment of this software that have been identified. After careful consideration, they have been determined not to be detrimental to the success of this project.

* A direct connection from the student’s school to his Scholar Saver account will not be implemented initially. This is because of inconsistent billing and finance systems used by schools. This will, however, not affect the success of this system too much. The student will still be able to record education expenses manually. As this is usually consistent throughout each academic year, this will not be a significant inconvenience for the student.
* The product will not provide any ability to directly move money, pay bills, or manage financial aid. While this could potentially prove helpful to the user, it is not something that should be expected from an application of this nature. This system will not provide banking services; rather, it is a tool to analyze and organize expenses.
* This project should plan to have its minimum viable product (MVP) deployed by the start of the upcoming academic year. This allows students to begin using the application as their academic year starts. Otherwise, we might expect the number of students who use the application to decrease if released during the school year because it could disrupt the already-found habits of new students. This gives the project a deadline but is feasible, as outlined in section 3.0.

## 1.7 Recommendation

RSS is advised to inspect this document for details on the Scholar Saver project and its expected success. Upon understanding the project and what it requires, BTC expects a response from RSS regarding the forward-moving status of this project. If the project is approved, development will begin immediately. If any questions or concerns arise, they should be brought to BTC immediately.

1.8 Document Overview

 The rest of the proposal will be structured as follows.

1. Project Initiation Request – The documentation that started this project.
2. Feasibility Assessment – An analysis of the feasibility of this project.
3. Requirements Definition – An extensive report of the functional and non-functional requirements of the system.
4. Requirements Model – A detailed description of how each requirement will be used in the system.
5. System Evolution – Future plans for this project.
6. Conclusions and Recommendations – A summary of the project and recommended next steps for the client.

Appendices – A list of materials for further reference.

Glossary – A listing of the terms used in this document.

References – A listing of the sources used in this proposal.

2.0 System Initiation

2.1 Project Initiation Request (PIR)

PIR-00000 *[PIR Number to be assigned by the Project Office]* Project Initiation Request (PIR) – Level1 v6.0

Project Name: Scholar Saver Student Name: Toby Smedes

**This Project Initiation Request (PIR) is to be completed for all requests expected to require over 40 hours of effort or over 4 weeks of total duration. For larger requests requiring over 40 person-days or estimated project costs greater than $5,000, this template is used to assess the product's feasibility and get approval to scope and plan the proposed project.**

**If approved, the Level 2 template (System Proposal: Part 1 and Part 2) must be completed.**

**NOTE: Sections 0-4 are required.** Section 5 is optional, but any ideas on estimating costs should be included. **Replace the *italic* prompts with your answers/information**. [Expand each section in this template as needed**.]**

**0. General Project Information**

|  |  |
| --- | --- |
| **Project Name:**  | *Scholar Saver* |
| **Two Sentence Request Description:** | *To develop and deploy a mobile application that assists the college student with budgeting. It also includes various resources and connections to help the student to be as financially responsible as possible.* |
| **Requested Launch Date(s):**  | *September 1, 2024* |
| **Department(s) Affected By Project:** | *Development, marketing, sales* |
| **Project's Customers:** | *Students*  |
| **Date Request Submitted:** | *4/16/2024* |

1. **Project Sponsor and Manager**

|  |  |  |
| --- | --- | --- |
| **Project Sponsor** |  | **Business Project Manager & Requestor**  |
| **Name:** | Andy Cameron |  | **Name:** | *Toby Smedes* |
| **Title:** | Professor |  | **Title:** | *Lead Software Developer* |
| **Department:** | Computer Science - SPU |  | **Department:** | *Product Development* |
| **eMail:** | acameron@spu.edu |  | **eMail:** | *smedest@spu.edu* |

1. **Business Problem or Opportunity: The motivation for this request**

*Describe the problem or opportunity that you would like to solve. Include a simple, high-level description of this request's business problems or opportunities. Focus on the problem or opportunity, not the solution. Be sure to include any date or deadline-related dependencies or needs related to the project.*

| *College students have notoriously poor spending habits. To cultivate a prepared and responsible future generation of graduates, bringing knowledge of financial responsibility is vital. All too often, students find themselves in loads of debt and struggling to make ends meet throughout their schooling years. While this is sometimes unavoidable, we believe there is much room for improvement among students. There is a significant lack of budgeting tools tailored to students—including features pertaining to various costs such as tuition, textbooks, and different fees, as well as fluctuating income streams from part-time jobs and financial aid disbursements. Additionally, students need to be introduced to general knowledge and financial literacy sooner. Given this gap, there is a substantial need for it to be filled by providing an accessible and comprehensive, yet easy-to-use budgeting tool available to students. This tool will provide students with the necessary resources to manage their finances wisely, make informed decisions with their money, and help them be more aware of their ongoing spending and saving habits. With this tool being aimed at students and the school calendar in mind, it would be optimal to have the initial release by the start of the fall quarter, or more precisely, mid-Q3 (end of August—start of September).* |
| --- |

1. **Justification, Impact, and Importance**

*What is the financial impact and justification for this request? How will the investment of time, resources, and capital be returned to our company? (Please note any contractual or regulatory requirements associated with the request. If you have an NPV, IRR, or ROI calculation, please provide the link(s) in this section.)*

**Assumptions**

|  |
| --- |
| * Colleges and universities will promote the use of our product through partnerships.
 |
| * Students will use the product regularly.
 |
| * That this product has a unique value proposition and that its target for students is desired.
 |
| * Students regularly use mobile devices and are able to take advantage of the application.
 |

**Competitive Landscape / Context**

|  |
| --- |
| * *There are several budget assistance apps; however, there are no real competitors for apps tailored to the college student.*
 |
| * Mint, Wally
 |

**Tangible Return, Opportunity, or Value One Time On-Going**

|  |  |  |
| --- | --- | --- |
| * *Awareness of where money is allocated.*
 | $0 | $10-100 /month |
| * Financial literacy resources.
 | $0 | $10 /month |
| * Student promotions and discounts are available in a centralized resource.
 | $0 | $0 |

**Intangible Benefits Impact or Value**

|  |  |
| --- | --- |
| * *Increased responsible spending habits.*
 | n/a |
| * Cultivation of a proactive mindset toward responsibility and prosperity.
 | n/a |

1. **Product Requirements**

*The Project team will gather detailed requirements once the project is approved. Use this section to articulate the critical solution components to help scope the project's size and complexity. Do not describe how the solution will be implemented; instead, only list the functionality or results you expect to receive when the product is complete/delivered.*

* 1. **Must Haves**

|  |
| --- |
| * + 1. User creation and profile management.
 |
| * + 1. Connection with checking/savings accounts to record spending and balances.
 |
| * + 1. Tracking for yearly education costs: tuition, fees, food and housing, books, etc.
 |
| * + 1. Visual overview of spending, upcoming costs, income, and how much money needs to be saved or if loans are necessary to cover the gap.
 |
| * + 1. Notifications for upcoming payments, deposits, and warnings if spending is too high for the current budget.
 |
| * + 1. The visual overview includes a monthly amount that the user has to spend on non-essential costs while still being encouraged to save as much as possible.
 |
| * + 1. A basic, free version with limited tracking features, and a premium, paid version with full functionality.
 |
| * + 1. Ability to partner with colleges to allow free use of the premium version of the application to its students if they promote the use to their students.
 |

* 1. **Could Haves** (Nice to Haves)

|  |
| --- |
| * + 1. *Direct connection to the school's information related to the user about their particular costs, fees, and due dates (so information does not have to be manually input by the student).*
 |
| * + 1. Community features for students to encourage each other and keep up to date with potential financial programs or local scholarships
 |
| * + 1. Various resources like books, articles, videos, and podcasts about financial responsibility and encouragement to help the student in their financial literacy.
 |
| * + 1. Aggregate user data and analytics and use this data for marketing and selling to research firms or other third-party advertisers.
 |
| * + 1. Page within the application to view applicable scholarships and opportunities to assist with educational costs.
 |
| * + 1. Page within the applications to view discounts and deals available only to students from various sources.
 |

* 1. **Won't Haves** (Don't Do's, aka Out of Scope)

|  |
| --- |
| * + 1. *Use of AI to advise the user on proper budgeting steps and spending decisions based on the individual needs of the user.*
 |
| * + 1. Banking services provided by this product.
 |

1. **Project Costs (Operating and Capital: Onetime and Recurring) [Optional]**

*This section is typically fleshed out after the requestor has submitted a PIR and received approval for the initial scoping effort. It captures the effort estimates, capital expenditures, and other costs associated with performing this work and creating the product/solution. If the submitter has thoughts or estimates on what these costs are or suggestions on how they might be estimated, please include those here. Add brief descriptions as needed.* ***Include at least 2 comments on your thinking around these items, even if you don't have specifics yet.***

**Labor Costs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type** | **Team(s) Affected** | **Low (hrs)** | **High (hrs)** |
| Analysis & Design |  | 0 | 0 |
| Development |  | 0 | 0 |
| Testing and Quality Assurance |  | 0 | 0 |
| Systems Integration |  | 0 | 0 |
| Deployment |  | 0 | 0 |
| Support and Maintenance |  | 0 | 0 |
| Sales and Marketing |  | 0 | 0 |
| **Total** |  |  **0** |  **0** |

| Comments:*Include notes here on what the costs are or how they can be estimated. (optional)* |
| --- |

**Capital Costs** (Equipment, Software, Licenses, …)

|  |  |  |
| --- | --- | --- |
| **Description** | **Quantity** | **Cost ($)** |
| Google play store |  | $25 |
| *Item 2* |  | $ 0 |
| **Total** |  | $ 0 |

| Comments: *Include notes here on what these are or how they can be estimated. (optional)* |
| --- |

**Maintenance Costs** (Costs after the product is live)

|  |  |  |
| --- | --- | --- |
| **Type** | **Hours / Month Low** | **Hours / Month High** |
| System / User Support | 0 | 0 |
| Business / Process Support | 0 | 0 |
|  |  |  |
|  |  |  |
| **Total Support & Maintenance**  |  **0** |  **0** |

3.0 Feasibility Assessment

**3.1 Introduction**

This section will assess and evaluate the risks involved in the development of Scholar Saver. Throughout this analysis, the risk of any category will be rated from very low to very high risk. Similarly, feasibility will be rated from ideal to feasible to risky.

**3.2 Feasibility Analysis**

**3.2.1 Technical Feasibility**

The development of Scholar Saver is **feasible** technically with **moderate** **risk**.

**3.2.1.1 User Familiarity**

Scholar Saver is specifically designed for college students. College students, being of a younger generation, will have no problem adopting new technology-especially mobile applications. The school will provide brief app support, and Scholar Saver will have customer service tools such as FAQs. Students are also likely familiar with online banking platforms that they already use. Connecting their online banking system with Scholar Saver may be a new process, but helpful information and set-up tutorials will be directly accessible to the users. Due to prior knowledge of students and accessible assistance, the risk here is **low**, and feasibility is **ideal.**

**3.2.1.2 Analyst Familiarity**

Finance-related systems are not something that the analysts at BTC have had much experience with; however, this type of system is not wildly different from many systems BTC has developed in the past. The developers at BTC are very familiar with mobile development, so this should not be a problem. Implementing connections between a student’s online banking account and their Scholar Saver account could prove to be challenging. This would be achieved using open banking application programming interfaces (API). Because a developer will be assigned to focus on this connection, the risk here is **moderate** and thus **feasible**.

**3.2.1.3 Project Size**

Scholar Saver is moderately large for a mobile application because it will store and process large amounts of secure, individual data. BTC consists of some of the best mobile developers in the industry and, thus, will be **feasible** with **low** **risk**.

**3.2.1.4 Project Structure**

The essential components of this system are well-defined in section 4.0. Some of these components may change, but not drastically. The system’s structure is reasonably straightforward and should not present a high risk. The feasibility in this area is **ideal** with **low** **risk**.

**3.2.2 Resource Feasibility**

The resource feasibility of Scholar Saver is **ideal** with very **low** **risk**:

* The developers at BTC are already very familiar with mobile application development and will not require any additional staff for this area. Two developers on the team will be designated to research and implement connectivity with open banking APIs.
* No new hardware will be purchased for this project; however, cloud infrastructure must be bought to store user data. This provides moderate risk because of the high cost, but the expected profits from the success of Scholar Saver will mitigate this.
* Because of BTC’s experience with mobile development, no new development environments or software licenses will need to be purchased. Because of the accessible materials, Scholar Saver is very feasible resourcefully.

**3.2.3 Schedule Feasibility**

The scheduling feasibility of Scholar Saver is **feasible** with **moderate** **risk**:

* All resources required will be available immediately to begin the development process.
* The project's ideal completion date for Scholar Saver is the first of August to ensure availability to all students before the beginning of the academic year. This gives the BTC team about 10 weeks to have an MVP ready for testing, which raises some risk for the project.
* The risks of delaying the initial release are low. Many students do not begin school until late September, and even if the product is not available for a school’s first week of school, the product can still be promoted and used throughout the year.
* Any delay in release will not affect RSS's business conduct.

**3.2.4 Organizational Feasibility**

The organizational feasibility of Scholar Saver is **ideal** with **low risk**:

* There are a few big names in budget-tracking mobile applications, namely Mint and Wally. These applications, however, are more suitable for more experienced individuals with more income streams and fail to meet the needs of college students. Scholar Saver also offers more features about promoting financial responsibility to the individual user.
* College students tend to be more tech-savvy than the general population because they are younger, so adopting a new mobile application should be no problem for them. Additionally, partnerships with the school can allow schools to assist their students with acquiring our product and any help they need along the way.
* Arranging partnerships with academic institutions will be vital to the success of this product. This raises moderate potential organizational risk, as these partnerships are not guaranteed. A strong sales initiative will be necessary to successfully set up contracts with schools to distribute the premium version of our software. However, because our product is insistent on bettering college students with its tools and resources, we are confident that schools will choose to buy into our partnership.
* Scholar Saver provides many benefits that were not previously available in the mobile application market. If this product is not developed, students will continue to lack the proper tools to organize their finances and be uneducated on financial responsibility.
* Scholar Saver aligns well with the goals of RSS to equip students with future-ready resources. Scholar Saver’s attribute that sets it apart is precisely this. The vision of RSS and Scholar Saver are in line and thus present no risk.

**3.2.5 Legal & Contractual Feasibility**

The legal and contractual feasibility of Scholar Saver is **ideal** with **low risk.**

**3.2.5.1 Legal**

 Scholar Saver’s legal feasibility is **ideal** with **low risk:**

* Scholar Saver will have to cooperate with regulatory bodies such as FERPA and GDPR, which would require clear communication with the students about how they want their data to be used and shared.
* GAAP and FLSA will also be adhered to and monitored where applicable.
* The use of open banking APIs presents a mild legal risk, as this would consist of dealing with very private personal information. The developers at BTC will be informed of this importance and ensure this is completed in the most secure way possible.

**3.2.5.2 Contractual**

 Scholar Saver’s contractual feasibility is **ideal** with **low risk:**

* BTC will continue to own the software and provide all its services to RSS at a yearly cost.
* RSS will receive all profits from Scholar Saver.
* BTC will continue to offer updates and maintenance for Scholar Saver so long as the contract with RSS is active.
* A contract that prohibits BTC from developing a similar application or competitor to Scholar Saver for 6 years will be produced.

**3.3 Additional Comments**

No additional feasibility comments are required.

**3.4 Conclusion**

Overall, Scholar Saver has **low risk** and thus is a **feasible** project. BTC is more than experienced in mobile development environments and is technically prepared to produce a lasting product. Scholar Saver will incorporate well into the educational environment, and we expect it to thrive. BTC has all the resources necessary to begin development immediately, without delay. The only concern presented in Scholar Saver’s feasibility assessment is its schedule. This may prove to be a challenging deadline to meet, but we are confident it will not inhibit the profitability of Scholar Saver. Overall, Scholar Saver is a feasible project, and we expect a great outcome.

4.0 Requirements Definition

**4.1 Introduction**

This section will cover the various requirements that are to be met by this project. The section is divided into functional, data, and non-functional requirements. Functional requirements comprise all the functioning components that the system must complete. These are easily described as actions that are completed by the system. Data requirements describe how data will be received, stored, and interacted with due to a functional requirement. A requirement for data will always result from some functional behavior of the system. Lastly, non-functional requirements are any requirements that describe the nature of the system. These requirements are easily observed as a behavior and generally require several functional requirements. These requirements will each be further categorized as being a ‘must,’ ‘should,’ ‘could,’ or ‘won’t’ have requirement.

**4.2 Functional Requirements**

**4.2.1 Must Have Requirements**

1. User account system
	1. Users must be able to create a secure, individualized account within the mobile application.
	2. The user’s personal information will be attached to their account and will not be viewable by anyone except anonymously.
	3. The user must be able to modify details about and delete their account at any time.
2. View spending history
	1. This is modeled in Use Case 1: View Spending History.
	2. Users must be able to view and track their history of expenses over some period of time.
	3. Users must be able to select from a weekly or monthly view. An annual view will be available with overall spending, omitting individual charges.
3. Filter Spending history
	1. This is modeled in Use Case 2: Filter Spending History.
	2. Within the viewing page of the user’s spending history, they must be able to filter their expenses by date, amount, and category.
4. Data Privacy Agreement
	1. The user will be presented with an agreement on account creation on how their data will be collected and used.
	2. The user can opt out of data collection.
	3. In future releases, user data can be collected and processed to sell to third parties.
5. Connect Online Bank
	1. This is modeled in Use Cases 3 & 4: Connect/Disconnect Banking API.
	2. The user can add and remove connections with their online bank in the application.
6. Adjust Expenses
	1. This is modeled by Use Case 5: Adjust Spending History.
	2. The user must be able to add, remove, and edit expenses within their spending history view.
	3. For adding or editing charges, the user can adjust the following:
		1. Brief title
		2. Description of expense
		3. Date of charge
		4. Amount charged
		5. Category of expense
7. Add School Expenses
	1. This is modeled by Use Case 6: Add Expense.
	2. In addition to adding personal expenses (as in requirement 6), the user should be able to add upcoming expenses related to their school, such as tuition and room & board.
	3. The user can set the date of the bill, the amount, and the purpose.
8. View upcoming bills and income
	1. This is modeled in Use Case 8: View Upcoming Expenses.
	2. The user must be able to view upcoming expenses through the following year.
9. Activate School Membership
	1. This is modeled in Use Case 7: Activate School Membership.
	2. Users must be able to enter a code to enroll in the system with their school if they choose to partner.
	3. This will give the user all premium features.

**4.2.2 Should Have Requirements**

1. View Resources
	1. This is modeled by Use Case 12: View Literacy Resources.
	2. The user should be able to view resources provided by RSS or, optionally, by their school that assists with financial responsibility.
	3. These should be viewable in the application (for things like brief articles or brochures) or direct the user to a webpage for things like videos and books.
	4. These resources are only available for premium users.
2. Filter Resources
	1. This is modeled by Use Case 13: Filter Resources.
	2. The user should be able to filter the resources provided by requirement 7 into categories determined by their medium. (i.e., books, articles, videos)
3. Pay for the Premium Version
	1. The user should be able to pay for the premium version of the application, either as a monthly, quarterly, or annual subscription.
	2. A discount will be provided for users who can prove their enrollment in an accredited academic institution.

**4.2.3 Could Have Requirements**

1. Scholarship View
	1. A page where users can view scholarships and other financial aid opportunities.
	2. These could be provided by the school’s financial aid office, RSS, or potentially be shared among users.

**4.3 Data Requirements**

1. Account System
	1. The user’s username and password must be securely stored to authenticate the user when logging in.
	2. The user should be able to reset their username and password.
2. Spending Analytics
	1. The user’s spending history must be stored securely in a private database.
	2. Financial history is imported from the user’s banking API into the database.
	3. This data should be able to be accessed by the user.
	4. The user should be able to modify the data in this database, as required in functional requirement 6.
3. Legal
	1. Any data stored relating to the user must adhere to their decisions in function requirement 4.
	2. This data also must adhere to legal and regulatory restrictions.
4. API
	1. The user should be able to connect with their online banking API and save the connection information for continual use.
	2. The data received from the API should be stored in the user’s spending history database.

**4.4 Non-functional Requirements**

1. Security Requirements
	1. The user’s account must be secured and protected from outside sources.
	2. The user's banking information used in the online banking connection requirements will be secured and inaccessible to anyone on the development team.
2. Performance Requirements
	1. The initial release will aim for 95% uptime.
	2. The system should initially be able to handle 1,000 simultaneous users.
3. Learnability Requirements
	1. The application will be simple to get started with and use.
	2. FAQs and tutorial videos for connecting bank accounts will be available.
4. Operational Requirements
	1. Scholar Saver will refresh user banking data from an API call every five minutes.
	2. Scholar Saver will allow partnering with academic institutions for unlimited access to the premium version to its students.

5.0 Requirements Model

**5.1 Introduction**

This section will include a Use Case diagram and supporting Use Case descriptions for the abovementioned requirements. A use case diagram visually represents how actors interact with and operate the requirements. An actor is any person or entity that directly interacts with the system in some way. These actors interact through Use Cases. A Use Case is a specific event or process initiated by an actor or another use case. Following this diagram will be several Use Case descriptions that describe each in more detail.

**5.2 Use-Case Diagram**



**5.3 Use-Case Descriptions**

|  |  |  |
| --- | --- | --- |
| **Use Case Name: View Spending History** | **ID: 1** | **Importance: Must Have** |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**Open Banking API |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: The user can view their spending history on a page of the application. This overview will show their recent expenses and analytics of spending habits. |
| **Trigger**: The user chooses the ‘Spending History’ page on the application.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User **Include**:  **Extend**: 2. Filter Spending History, 5. Adjust Spending History **Generalization**:  |
| **The Normal Flow of Events**: 1. The user opens the application.
2. The user selects the ‘Spending History’ page.
3. The user is given a list of recent transactions from their account.
 |
| **Sub-flows**: * 1. The user is displayed with the default view of a weekly timeframe.
	2. A graphical representation of spending categories will be displayed.
	3. The user can select these categories to view individual transactions within each category
 |
| **Alternate/Exceptional Flows**: In flow 3, if the user has no history to show: 3.1 No information will be displayed in the history view. 3.2 The user is prompted to either manually add transactions or connect their online banking account |
| **Special Requirements:** Performance:1. The first 3 transactions will be displayed within 3 seconds of initiation.

Security1. In each transaction listing, only the last 4 digits of the associated account number will be displayed.
 |
| **To do/Issues:** 1. Find the desired way to visualize spending categories.
 |
| **Use Case Name**: Filter Spending History | **ID**: 2 | **Importance**: Must Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: Within the Spending History view, the user can filter the transaction history by several criteria, including category, date, and amount. |
| **Trigger**: The user selects “filter” from the Spending History view.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**:  **Include**:  **Extend**: 1. View Spending History **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects the “filter” button from the Spending History view.
2. The user is prompted to select a filter type.
3. The transaction history view is updated according to the newly applied filter.
 |
| **Sub-flows**:  2.1 If the category filter is selected, the user will be prompted to select at least one category to display. 2.2 If the date filter is selected, the user will be prompted to select weekly, monthly, or annual views. 2.3 If the amount filter is selected, the user will be prompted to sort by either least-to-greatest or greatest-to-least. |
| **Alternate/Exceptional Flows**: N/A |
| **Special Requirements:** Performance:1. The view should update according to the selected filter within 5 seconds.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Connect Banking API | **ID**: 3 | **Importance**: Must Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**1. Open Banking API
 |
| **Stakeholders and Interests**: 1. Online bank – interested in ensuring the connection is made securely and no information is leaked.
 |
| **Brief Description**: The user inputs the required information and allows Scholar Saver to connect to their online bank through their open banking API. This information is saved for future use.  |
| **Trigger**: The user selects “Add new bank” from the settings menu.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User, Open Banking API **Include**: 11. Update Spending History **Extend**: 4. Disconnect Banking API **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “Add new bank” from the settings menu.
2. The user is prompted to sign in to their online bank provider.
3. The user agrees to the terms and conditions of using their data.
4. The API connection request is sent.
5. The recent transactions from the newly connected bank are added to the user’s financial history view.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: 3.1 If the user does not agree to the terms, the process is terminated, and they are redirected to the application’s home page. |
| **Special Requirements:** Security1. The user’s login credentials for the online bank will be stored for retrieval and will not be viewable by anyone.
 |
| **To do/Issues:** Find legal regulations that need to be adhered to for using open banking APIs |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Disconnect Banking API | **ID**: 4 | **Importance**:  |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**Online banking API |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: If the user desires, they can select any of their connected banks and terminate the connection between them. This will purge the database of any information about the bank and, optionally, remove all prior transactions from the bank from the user’s account. |
| **Trigger**: The user selects “disconnect bank” from the settings menu.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User **Include**:  **Extend**: 5. Adjust Spending History **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “disconnect bank” from the settings menu.
2. The user is prompted to select the account to remove.
3. The user is asked to confirm the disconnection.
4. The user is asked if they wish previously logged transactions to be removed as well.
 |
| **Sub-flows**: 3.1 If the user declines, the process is terminated.4.1 If the user selects this option, all previous transactions from this account are removed. |
| **Alternate/Exceptional Flows**: 2.1 If the user has no accounts to remove, the user is notified and prompted to add an account. |
| **Special Requirements:** Data1. All data from this bank that has not already been imported as a transaction must be purged from the database associated with the user.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Adjust Spending History | **ID**: 5 | **Importance**: Must have |
| **Primary Actor**: User | **Use Case Type**: Detail, essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: The user can adjust any detail of a specific transaction, like the amount, date, and category. They can also add new transactions. |
| **Trigger**: The user selects “adjust” from the spending history view.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**:  **Include**: 6. Add Expense **Extend**: 1. View Spending History, 4. Disconnect Banking API **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “adjust” from the spending history view.
2. The user selects “add new” or “edit” next to any transaction.
3. The text inputs for each value of the transaction item are supplied.
4. When the user is finished, they click “save.”
5. The adjustments are recorded.
 |
| **Sub-flows**:  |
| **Alternate/Exceptional Flows**: 4.1 If the input values are invalid, the user is notified and asked to modify them. |
| **Special Requirements:** Operational1. The input areas must be valid. e.g., *Amount* must be a numerical value.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Add Expense | **ID**: 6 | **Importance**: Must Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: Academic Institutions - Interested in making sure their tuition payments are received on time. |
| **Brief Description**: The user can add an upcoming expense to their records. This can be something like a tuition bill or a rent payment. |
| **Trigger**: The user selects “add upcoming expense” from the upcoming expenses view.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**:  **Include**: 5. Adjust Spending History **Extend**: 8. View Upcoming Expenses **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “add upcoming expense” from the upcoming expenses view.
2. The user is given a similar prompt from Use Case 5 to add a new expense.
3. The user selects the date the charge is expected.
4. The user selects the account that the charge is scheduled from.
5. The user selects “save.”
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: 5.1 If any of the inputs are invalid, the user is asked to modify. |
| **Special Requirements:** N/A |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Activate School Membership | **ID**: 7 | **Importance**: Must Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**Academic Institution |
| **Stakeholders and Interests**: Academic Institution – Interested in their students having access to the application. |
| **Brief Description**: The user can enter an enrollment code to enroll in the premium version of the app with their school. This also gives the user access to resources unique to their school.  |
| **Trigger**: The user selects “activate school membership” from the settings menu.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User **Include**:  **Extend**:  **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “activate school membership” from the settings menu.
2. The user is prompted for the school’s enrollment code.
3. The user is asked to confirm with their student email address.
4. The user is added to the school’s directory and given a premium account status.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: 3.1 If the user does not have a valid student email address, they will be asked to contact customer support for further assistance. |
| **Special Requirements:** 1. The school the student is trying to connect with must have partnered with Scholar Saver.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: View Upcoming Expenses | **ID**: 8 | **Importance**: Must Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: The user can select a page from within the application that shows them all of their upcoming expenses. |
| **Trigger**: The user selects the “upcoming expenses” page.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User **Include**:  **Extend**: 6. Add Expense **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects the “upcoming expenses” page.
2. The user is given a list of their next expenses and what date they are scheduled for.
3. The user has the option to edit or add more expenses.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: N/A |
| **Special Requirements:** N/A |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Partner With Scholar Saver | **ID**: 9 | **Importance**: Must Have |
| **Primary Actor**: Academic Institution | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: RSS – Interested in profits from more school partnerships. |
| **Brief Description**: Any accredited academic institution will be able to partner with Scholar Saver to provide their students with the premium version of the application. |
| **Trigger**: The academic institution selects “partner with us” from the school settings menu in the application.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: Academic institution **Include**:  **Extend**:  **Generalization**:  |
| **The Normal Flow of Events**: 1. The academic institution selects “partner with us” from the school settings menu in the application.
2. An application for a partnership will be filled out and submitted.
3. The application will be reviewed by Scholar Saver.
4. The school will be provided with their unique referral code, and instructions on how students can activate their benefits.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: If the application is rejected in step 3:* 1. The institution will be notified of the rejection and given a reason.
	2. The institution will be given the opportunity to reapply.
 |
| **Special Requirements:** Legal:1. A legal contract will need to be produced for each partnership with the school, outlining the terms of the agreement.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Add Literacy Resource | **ID**: 10 | **Importance**: Should Have |
| **Primary Actor**: Academic Institution | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: Students – Interested in receiving applicable and up-to-date resources. |
| **Brief Description**: The manager of the academic institution can add resources that will be available to students that have activated their membership with the school. |
| **Trigger**: The academic institution selects “add resource” from their school menu.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**:  **Include**:  **Extend**: 12. View Literacy Resources **Generalization**:  |
| **The Normal Flow of Events**: 1. The academic institution selects “add resource” from their school menu.
2. The manager can add various types of resources to be available to students.
3. They are asked what type of resource.
4. They input the source of the resource.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: N/A |
| **Special Requirements:** N/A |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Update Spending History | **ID**: 11 | **Importance**: Must Have |
| **Primary Actor**: Open Banking API | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**N/A |
| **Stakeholders and Interests**: User – interested in making sure their transactions are up-to-date. |
| **Brief Description**: A get request will be sent to the Open Banking API every 6 hours for each user. Any new transactions will be added to the user’s transaction history. |
| **Trigger**: Every six hours.**Type** (mark one): \_\_\_ External \_X\_ Temporal |
| **Relationships**:  **Association**: Open Banking API **Include**: Connect Banking API **Extend**:  **Generalization**:  |
| **The Normal Flow of Events**: 1. Every 6 hours, a request will be made to gather any new information from the open banking API.
2. The new information will be parsed and stored as a new transaction in the user’s transaction history.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: In step 1, if the request was unsuccessful:* 1. The user will receive a notification that there was an error with their bank connection.
	2. They will receive steps on how to fix the error, or will be referred to customer service.
 |
| **Special Requirements:** Performance:1. Each update should be every 6 hours.

Security:1. These requests should be secured and protected.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: View Literacy Resources | **ID**: 12 | **Importance**: Should Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**Academic Institution |
| **Stakeholders and Interests**: RSS – Interested in students having helpful financial literacy resources. |
| **Brief Description**: The user and the manager of the academic institution will be able to view financial resources that have been made available by the school.  |
| **Trigger**: Navigate to the “financial literacy resources” page of the application.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**: User, Academic Institution **Include**:  **Extend**: 10. Add Literacy Resource, 13. Filter Resources **Generalization**:  |
| **The Normal Flow of Events**: 1. Navigate to the “financial literacy resources” page of the application.
2. Resources that have been published by the school will be viewable first.
3. Resources that have been published by RSS will be viewable just below the school’s resources.
4. The user can view any of these and save them for later.
 |
| **Sub-flows**: N/A |
| **Alternate/Exceptional Flows**: N/A |
| **Special Requirements:** Operational:1. RSS and partnered school will need to publish resources for this feature to be effective.
 |
| **To do/Issues:** N/A |

|  |  |  |
| --- | --- | --- |
| **Use Case Name**: Filter Resources | **ID**: 13 | **Importance**: Could Have |
| **Primary Actor**: User | **Use Case Type**: Detail, Essential |
| **Supporting Actors:**Academic Institution |
| **Stakeholders and Interests**: N/A |
| **Brief Description**: Any user that can view financial literacy resources can filter these resources by their medium, or their origin. |
| **Trigger**: The user selects “filter” from within the literacy resources page.**Type** (mark one): \_X\_ External \_\_\_ Temporal |
| **Relationships**:  **Association**:  **Include**:  **Extend**: 12. View Literacy Resources **Generalization**:  |
| **The Normal Flow of Events**: 1. The user selects “filter” from within the literacy resources page.
2. The user is prompted with the options to filter for.
3. The user selects the desired filter.
4. The resources are filtered and displayed according to the selected filter.
 |
| **Sub-flows**: * 1. The user can filter by medium of resource (article, podcast, book, etc.).
	2. The user can sort by publisher (RSS, school, etc.).
 |
| **Alternate/Exceptional Flows**: N/A |
| **Special Requirements:** Data:1. The resources published must be tagged with attributes that can be sortable.
 |
| **To do/Issues:** N/A |

6.0 System Evolution

There are three primary additional features and functionalities planned for the future of Scholar Saver.

1. The MVP will not include each feature surrounding the ability to provide financial literacy resources through the Scholar Saver application. These are part of a planned feature update subsequent to the initial release. These features will begin development after the initial release, assuming product success.
2. The ability to purchase the full, premium version of the product will also be excluded from the initial release. Users can use the full version through the partnership with their school. However, individual purchases will be a later addition to the product. This is to allow more time to develop a secure online purchasing system.
3. Providing the user with access to scholarships that apply to them will be planned as a later addition. This would consist of listing popular scholarships in a format similar to the financial literacy resources. Also, similar to the literacy resources, schools can provide scholarships that may be specific to their school.

Additionally, BTC will record user, school, and RSS feedback about issues and suggestions for future releases. This feedback will be evaluated for feature implementation in subsequent versions.

7.0 Conclusions and Recommendations

**7.1 Conclusions**

Scholar Saver is a mobile application that will satisfy the demand from students for an applicable budgeting system. Scholar Saver will provide benefits to BTC, RSS, students around the country, and academic institutions. RSS can successfully add another resource to their offerings, students can freely use Scholar Saver, and schools can offer their students another incentive. With the requirements and restraints outlined in this document, BTC is confident in deploying an initial release in the next four months, in time for the start of the academic year. The Scholar Saver project is feasible for the developers at BTC to complete and should not involve any significant difficulties. In conclusion, BTC will be able to meet the requirements that this project raises in a timely and sufficient manner.

**7.2 Recommendations**

After reviewing this document, any questions, comments, or concerns should be voiced to BTC. This will allow for any changes or alterations that need to be made to be done so promptly. BTC will do its best to meet every requirement the client requests if more arise. Additionally, BTC recommends that the client contact academic institutions to prepare for partnership with them. The schools that agree should understand the terms of using the application and providing it to their students at a cost.

# **Appendices**

No additional reference materials were used.

# **Glossary**

 **RSS –** Resources for Striving Students; an educational company interested in providing the best resources to college students.

**BTC –** Big Tech Company, a large software company specializing in quickly developing software for clients.

**Scholar Saver –** A proposed mobile application to assist college students with personal finance.

**Student –** The primary users of Scholar Saver. Interchangeable with *user.*

**Freemium –** A subscription model with a free, entry-level tier with limited features. Optionally, one can upgrade to a premium tier with full access to features.

**FERPA –** Federal Educational Rights and Privacy Act.

**GDPR –** General Data Protection Regulation.

**API –** Application Programming Interface.

**FAQs –** Frequently Asked Questions.

**MVP** – Minimum Viable Product.

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