



**Automated Code Review System  
(Software Development Budget)**

**SOEN 6841 – Software Project Management  
By  
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**Submitted By – Group 18**

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## Software Development Budget

### Objective

The purpose of this document is to conduct a thorough budget study for the **Automated Code Review System (ACRS)**, estimate the budget required for the entire software development lifecycle and break it down into categories.

### Cost Categories

The method used to estimate project cost is activity-based costing. We shall use the WBS (Work Breakdown Structure) to consult and provide the cost for each work package and develop the costing baseline using the project schedule. In case of re-estimation of the project cost, it will be a mixed approach of both bottom-up and parametric modeling. The modeling approach will be parametric in nature with a coding line cost. The work breakdown structure is several major phases of the project, each having its own set of tasks and major milestones. The schedule is developed in such a way that there is flow from requirements gathering to deployment in a logical way, and quality assurance is built into the process.

SN	Work Breakdown Structure Item	Vendor	Amount
1	Human Resources		\$ 30,500.00
2	Development Environment (Azure)	Microsoft	\$ 4,500.00
3	Servers Fees	HP	\$ 7,667.00
4	Administrator Workstation	HP	\$ 500.00
5	Miscellaneous		\$ 1,958.00
<b>Total Cost Estimate</b>			<b>\$ 45,125.00</b>

### Resource Cost

Resource cost refers to the total amount of money needed to get all the things and people required for our Automated Code Review System project.

- **Human Resources:** This category includes the costs associated with compensating the team working on the Automated Code Review System, covering developers, project managers, and any other staff involved, totaling \$30,500.
- **Development Environment (Azure):** An online environment for coding and testing is essential. Utilizing services offered by Microsoft Azure, we are allocating \$4,500 for this purpose.
- **Server Fees:** The operation of our system necessitates reliable servers. We have opted for HP servers, given their proven reliability, at a cost of \$7,667.
- **Administrator Workstation:** Managing the system requires a high-performance computer. An allocation of \$500 has been made for an HP workstation to fulfill this need.
- **Miscellaneous:** To account for unforeseen expenses such as software licenses or additional tools, we have set aside \$1,958.

This cost estimation encompasses the primary expenses involved in developing and maintaining the Automated Code Review System, ensuring a comprehensive approach to budget planning.

### **Contingency Cost**

This contingency budget is designed to ensure we can cover unexpected costs without overburdening our primary budget. Potential unforeseen expenses could include sudden price hikes, the need for extra personnel, or the necessity to purchase additional equipment. By setting aside this extra funding, we safeguard the project against interruptions or delays that could arise from unexpected financial requirements.

It is essential to have extra funds available, as sometimes projects encounter unexpected challenges. We recommend adding a contingency budget, accounting for 10%-20% of the total estimated costs, resulting in an additional allocation of \$4,512.50- \$9025 for unforeseen expenses. The plan we have outlined smartly incorporates both preparedness for unexpected costs and strategies to optimize spending, ensuring your project remains on track and within budget.

### **Preparedness for Unexpected Costs**

- **Unexpected Costs:** Allocating funds for unforeseen expenses, such as an unexpected increase in server fees, ensures the project can continue without interruption.
- **Emergency Fixes:** The contingency budget is designed to address urgent issues, such as critical bugs, quickly and effectively.
- **Additional Resources:** Should the project require extra manpower to meet deadlines, the contingency budget provides financial flexibility to accommodate this need.
- **Decision Making:** The project manager plays a crucial role in deciding when to utilize the contingency funds, ensuring that spending is justified and necessary.

This approach not only prepares the team for surprises but also safeguards the main budget from unforeseen strains.

### **Cost Saving Measures**

To make sure we do not spend too much, we are also planning to save money wherever we can. Here are our strategies:

- **Using Open-Source Software:** Leveraging free, open-source software can significantly reduce costs compared to purchasing expensive licenses.
- **Negotiating with Vendors:** Engaging in negotiations with service and product providers, like Microsoft and HP, could lead to discounts or better deals, further stretching the budget.
- **Optimizing Resource Usage:** Efficiently using servers and cloud services, including shutting them down when not in use, will decrease operational costs.

- **Reusing Resources:** Repurposing code, tools, and hardware from previous projects not only saves money but also accelerates development times.
- **Regular Budget Reviews:** Continuously monitoring expenditure allows for real-time adjustments, ensuring funds are allocated where most needed and identifying opportunities to reallocate underspent budgets.

These cost-saving measures are essential for maintaining financial health and ensuring the project's success without compromising on quality or timelines.

### **Cost Estimation Based on WBS**

The cost estimate is divided on the initial work breakdown structure and might change as the project progresses. The Cost Estimation based on the Work Breakdown Structure (WBS) serves as a crucial component in the planning and management of the Automated code review system project.

This estimation outlines the anticipated budget required for various aspects of the software development lifecycle, encompassing human resources, development environment, infrastructure, licenses and tools, training, consulting services, testing, legal compliance, marketing, and contingency reserves.

As the project progresses, this initial cost estimation will be refined and updated to reflect any changes in scope, requirements, or market conditions, ensuring effective budget management throughout the project lifecycle.

The following page demonstrates the Work Breakdown Structure for the Automated Code Review System.

Task Name	Fixed Cost	WBS L-1 Total	Percentage
1. Requirements gathering	\$0.0	\$7800	17.28%
1.1. Define requirements	\$0.0		
1.2. Define business requirements	\$1000		
1.3. Define software requirements	\$2300		
1.4. Define server requirements	\$1500		
1.5. Define risk and contingency plans	\$3000		
2. Web app design	\$0.0	\$6150	13.62%
2.1. Create user interface wireframe	\$2650.0		
2.2. Create a prototype	\$3500.0		
3. Web app implementation	\$0.0	\$15375	34.09%
3.1. Develop user interface (UI)	\$3425.0		
3.2. Develop application backend	\$0		
3.2.1. Create database for Authentication	\$1000		

3.2.2.	Create UML and ER diagrams	\$1450		
3.2.3.	Create database schema from ER diagrams	\$1000		
3.2.4.	Migrate schema to database	\$1000		
3.2.5.	Develop back-end codes	\$7500		
4.	Web app testing and quality assurance	\$0.0	\$7700	17.07%
4.1.	App testing	\$0.0		
4.1.1.	Create test scripts	\$500		
4.1.2.	Perform unit testing	\$2000		
4.1.3.	Perform functional testing	\$2000		
4.1.4.	Perform integration testing	\$2000		
4.1.5.	Prepare testing report	\$1200		
4.2.	Quality assurance	\$0.0		
4.2.1.	Prepare quality assurance report	\$0.0		
5.	Web app deployment	\$0.0	\$2200	4.87%

5.1. Server and network setup	\$2200.0		
5.2. Go live	\$0.0	\$3900	13.07%
5.2.1. Deploy the application	\$2000		
5.2.2. Pilot the control and management of the system	\$1900		
6. Web app deployment	\$0.0	\$2000	4.6%
6.1. Post implementation review	\$1500		
6.2. Documentation and knowledge transfer	\$500		