**Innovative Software Solution Proposal**

**Description:**

In this project, you will take on the role of project managers and propose an innovative software solution to address a real-world problem or capitalize on an emerging opportunity. The project will involve the following key components:

**Problem Identification:**

Each group will research and identify a specific problem or opportunity within a chosen domain (e.g., education, healthcare, finance, etc.).

The problem or opportunity should be one that can be addressed through the development and implementation of a software solution.

**Market Analysis:**

Conduct a market analysis to understand the target audience, potential users, and competitors in the chosen domain.

Identify the unique selling points and value proposition of the proposed software solution.

**Feasibility Study:**

Perform a feasibility study to assess the technical, operational, and economic viability of the proposed software solution.

Consider factors such as technology requirements, resource availability, and potential return on investment.

**Solution Proposal:**

Develop a comprehensive proposal for the software solution, outlining its key features, functionalities, and benefits.

Clearly articulate how the proposed solution addresses the identified problem or opportunity.

**Project Plan(WBS):**

Create a detailed project plan that includes timelines, milestones, and deliverables for the development and implementation of the software solution.

Identify critical dependencies and allocate resources effectively.

**Risk Assessment and Mitigation:**

Conduct a risk assessment, identifying potential challenges and uncertainties associated with the project.

Develop a risk mitigation plan that includes strategies for addressing and minimizing identified risks.

**Budgeting:**

Estimate the budget required for the entire software development lifecycle.

Break down the budget into categories such as development, testing, marketing, and ongoing maintenance.

**Presentation and Justification:**

Prepare a compelling presentation that justifies the selection of the proposed project.

Clearly communicate the expected impact of the software solution and its alignment with industry trends and needs.

**Key Learning Objectives:**

Proposal development and articulation of project scope.

Market analysis and understanding of the competitive landscape.

Feasibility assessment and risk management.

Project planning, budgeting, and resource allocation.

Effective communication of project justification and benefits.

This project empowers students to apply their project management skills to a real-world scenario, fostering creativity, critical thinking, and strategic planning. It also encourages students to explore and propose solutions in areas that align with their interests or future career aspirations within the realm of software project management.

**Expectations from individual Deliverable**

|  |  |  |
| --- | --- | --- |
| **Deliverable** | **Topic numbers to be covered from template** | **Names of topics** |
| D1 | 1, 2 | Problem Identification, Market Analysis |
| D2 | 3,4,5,6,7 | Feasibility Study, Solution Proposal, Project Plan, Risk Assessment and Mitigation, Budgeting |
| D3 | 8 | Final Project Presentation and justification (Possibly a partial execution) |

**Templates:**

1. **Problem Identification**

**Title:** Problem Identification Report

**Objective:** Research and identify a specific problem or opportunity within the chosen domain that can be addressed through a software solution.

**Content:**

**Problem/Opportunity Statement**:

Clear articulation of the identified problem or opportunity.

Concise description of its significance in the chosen domain.

**Stakeholder Analysis**:

Identification of key stakeholders affected by the problem or benefiting from the opportunity.

Brief overview of their interests and concerns.

**Relevance to Software Solution:**

Explanation of how the problem or opportunity can be addressed through software development.

Initial thoughts on the scope of the software solution.

1. **Market Analysis**

**Title:** Market Analysis Report

**Objective:** Conduct a thorough market analysis to understand the target audience, potential users, and competitors in the chosen domain.

**Content:**

**Target Audience Identification:**

Definition of the primary target audience for the software solution.

Demographic and psychographic characteristics of the target audience.

**Competitor Analysis:**

Identification and analysis of competitors offering similar solutions.

Assessment of competitor strengths, weaknesses, opportunities, and threats.

**Business values:**

Definition of the unique selling points that set the proposed solution apart.

Articulation of the value proposition for potential users.

1. **Feasibility Study**

**Title:** Feasibility Study Report

**Objective:** Assess the technical, operational, and economic viability of the proposed software solution.

**Content:**

**Technical Feasibility:**

Evaluation of the technology requirements for the software solution.

Assessment of the feasibility of implementing the required technology.

**Operational Feasibility:**

Analysis of the operational impact of the proposed solution on existing processes.

Identification of potential challenges and benefits in the operational context.

**Economic Feasibility:**

Estimation of the economic viability of the project.

Consideration of resource availability, potential return on investment, and cost-benefit analysis.

1. **Solution Proposal**

**Title:** Software Solution Proposal

**Objective:** Develop a comprehensive proposal for the software solution, outlining key features, functionalities, and benefits.

**Content:**

**Solution Overview:**

Comprehensive description of the proposed software solution.

Explanation of how it addresses the identified problem or opportunity.

**Key Features and Functionalities:**

Detailed listing of the essential features and functionalities of the software.

Use cases or scenarios illustrating how users will interact with the solution.

**Benefits and Impact:**

Clear articulation of the benefits that users and stakeholders will derive from the solution.

Expected impact on the target audience and the broader domain.

1. **Project Plan(WBS)**

**Title:** Software Solution Project Plan

**Objective:** Create a detailed project plan that includes timelines, milestones, and deliverables for the development and implementation of the software solution.

**Content:**

**Project Timeline:**

Gantt chart or timeline illustrating the key phases and milestones of the project.

Allocation of time to each project phase.

**Milestones and Deliverables:**

Identification and description of major project milestones.

Listing of deliverables at each project phase.

**Resource Allocation:**

Allocation of human and technological resources to each project phase.

Identification of critical dependencies.

1. **Risk Assessment and Mitigation**

**Title:** Risk Assessment and Mitigation Plan

**Objective:** Conduct a risk assessment, identifying potential challenges and uncertainties associated with the project. Develop a risk mitigation plan.

**Content:**

**Risk Identification:**

Comprehensive list of potential risks associated with the project.

Categorization of risks (technical, operational, economic, etc.).

**Risk Impact Analysis:**

Assessment of the potential impact of each identified risk on the project.

Prioritization of risks based on severity and likelihood.

Risk Mitigation Strategies:

Development of strategies to mitigate or minimize the impact of identified risks.

Contingency plans for addressing unforeseen challenges.

1. **Budgeting**

**Title:** Software Development Budget

**Objective:** Estimate the budget required for the entire software development lifecycle and break it down into categories.

**Content:**

**Cost Categories:**

Breakdown of the budget into categories such as development, testing, marketing, and ongoing maintenance.

Allocation of funds to each category.

**Resource Costing:**

Estimation of costs associated with human resources, technology, and any external services required.

Detailed calculation of resource costs.

**Contingency Budget:**

Allocation of a contingency budget for unforeseen expenses.

Explanation of the rationale behind the contingency budget.

1. **Presentation and Justification**

**Title:** Project Presentation and Justification

**Objective:** Prepare a compelling presentation that justifies the selection of the proposed project. Clearly communicate the expected impact of the software solution and its alignment with industry trends and needs.

**Content:**

**Introduction:**

Brief overview of the problem or opportunity and the proposed solution.

Hook or attention-grabbing introduction.

**Market Justification:**

Presentation of market analysis findings.

Justification of the project's relevance and potential success in the market.

**Feasibility and Viability:**

Highlights from the feasibility study, emphasizing technical, operational, and economic viability.

Visual aids to support key feasibility points.

**Solution Highlights:**

Visual representation of key features and functionalities.

Demonstrations or prototypes if applicable.

**Project Plan Overview:**

Summary of the project plan, emphasizing timelines, milestones, and resource allocation.

Visualization of the project timeline.

**Risk Management Overview:**

Highlights from the risk assessment and mitigation plan.

Emphasis on strategies in place to address potential challenges.

**Budget Overview:**

Presentation of the budget breakdown.

Clear articulation of resource allocation and the contingency budget.

**Conclusion and Call to Action:**

Summary of key points.

Call to action or next steps for stakeholders.

**Rubrics**

Here are the rubrics for each of the deliverables:  
**Note:** Challenging components are mentioned in some sections and are necessary to get excellent marks in those sections.

Deliverable-1

### 1. **Problem Identification (100 points)**

* **Problem/Opportunity Statement (40 points)**:
  + Clear articulation of the identified problem or opportunity (20 points).
    - **Basic (10 points)**: General problem is described but lacks focus.
    - **Above Average (15 points)**: Problem is articulated well but lacks clarity in impact.
    - **Excellent (20 points)**: Clear, detailed problem statement with specific examples and relevance to the domain.
  + Concise description of its significance in the chosen domain (20 points).
    - **Basic (10 points)**: General significance is mentioned.
    - **Above Average (15 points)**: Significance is explained, with minor gaps in domain relevance.
    - **Excellent (20 points)**: In-depth description of significance, supported by data or industry examples.
* **Stakeholder Analysis (30 points)**:
  + Identification of key stakeholders affected by the problem or benefiting from the opportunity (15 points).
    - **Basic (7 points)**: General stakeholder groups identified.
    - **Above Average (12 points)**: Most key stakeholders are identified with some detail.
    - **Excellent (15 points)**: Thorough identification with detailed explanations of stakeholders’ roles.
  + Brief overview of their interests and concerns (15 points).
    - **Basic (7 points)**: Stakeholders’ interests and concerns are listed but lack depth.
    - **Above Average (12 points)**: Some analysis of interests and concerns.
    - **Excellent (15 points)**: Detailed overview, connecting stakeholders’ needs to the identified problem.
  + **Challenging Component**: Present insights in a table format or diagram to visualize stakeholder relationships and concerns.
* **Relevance to Software Solution (30 points)**:
  + Explanation of how the problem or opportunity can be addressed through software development (15 points).
    - **Basic (7 points)**: General mention of software’s role.
    - **Above Average (12 points)**: Software solution is explained but lacks scope or complexity.
    - **Excellent (15 points)**: Detailed explanation of how software can address the problem, with scope consideration.
  + Initial thoughts on the scope of the software solution (15 points).
    - **Basic (7 points)**: Basic scope mentioned.
    - **Above Average (12 points)**: Some scope outlined with limited examples.
    - **Excellent (15 points)**: Clear scope definition with examples of potential features and user interaction.
  + **Challenging Component**: Include a visual (e.g., mind map, flowchart) showing initial thoughts on how the software will solve the problem.

### 2. **Market Analysis (100 points)**

#### **Target Audience Identification (40 points)**

* **Target Audience for the Software Solution (20 points)**:
  + **Basic (10 points)**: Provides a general target audience but lacks precision.
  + **Above Average (15 points)**: Defines a target audience with reasonable clarity but lacks depth in explanation.
  + **Excellent (20 points)**: Provides a detailed, clear description of the target audience, including examples of typical users and context (e.g., industry, role, lifestyle).
* **Demographic and Psychographic Characteristics of the Target Audience (20 points)**:
  + **Basic (10 points)**: Provides general demographic and psychographic characteristics without much depth.
  + **Above Average (15 points)**: Describes these characteristics reasonably well but could use more supporting details or data.
  + **Excellent (20 points)**: Thorough analysis of demographic (age, gender, income, location) and psychographic (values, lifestyle, behavior) characteristics. Draws connections between these traits and how the software solution meets their needs.

#### **Competitor Analysis (40 points)**

* **Identification and Analysis of Competitors Offering Similar Solutions (20 points)**:
  + **Basic (10 points)**: Lists competitors without any meaningful comparison or insight.
  + **Above Average (15 points)**: Provides a list of competitors and some analysis but lacks depth in exploring how competitors meet user needs.
  + **Excellent (20 points)**: Thorough identification and analysis of key competitors, explaining their business models, target audiences, and approaches to solving the problem. Provides specific examples of competitive products or services.
* **Assessment of Competitor Strengths, Weaknesses, Opportunities, and Threats (SWOT) (20 points)**:
  + **Basic (10 points)**: Provides a very basic SWOT analysis with minimal insight.
  + **Above Average (15 points)**: Provides some depth in the SWOT analysis.
  + **Excellent (20 points)**: In-depth SWOT analysis that is both specific and actionable, offering insights that could be used to shape product features, marketing strategy, or positioning.

**Challenging Component**: Require students to **perform a feature comparison** between their solution and competitors' solutions. This can be presented as a **comparison matrix** showing where their solution excels, or lacks compared to competitors.

#### **Business Values (20 points)**

* **Definition of Unique Selling Points (USPs) that Set the Proposed Solution Apart (10 points)**:
  + **Basic (5 points)**: Provides generic USPs without much detail or insight.
  + **Above Average (8 points)**: Defines USPs but lacks clarity on how they compare to competitors.
  + **Excellent (10 points)**: Clearly articulates strong USPs that are specific, differentiating, and backed by a real-world analysis of competitor gaps or user needs.
* **Articulation of the Value Proposition for Potential Users (10 points)**:
  + **Basic (5 points)**: Describes the value proposition in general terms.
  + **Above Average (8 points)**: Provides a reasonably clear value proposition but misses some connection to user needs or differentiation from competitors.
  + **Excellent (10 points)**: Provides a detailed and compelling value proposition that is aligned with user needs, supported by market data, and clearly differentiated from the competition.

**Challenging Component**: Explain how value proposition translates into **long-term benefits**, such as cost savings, improved user experience, or competitive advantage.

Deliverable-2

### 3. **Feasibility Study (100 points)**

#### **Technical Feasibility (40 points)**

* **Evaluation of the Technology Requirements for the Software Solution (20 points)**:
  + **Basic (10 points)**: General description of the technology stack is provided but lacks depth or specificity.
  + **Above Average (15 points)**: Provides a detailed explanation of the technology stack, including software and hardware requirements, but lacks some details on integration or scalability.
  + **Excellent (20 points)**: Thorough analysis of all technology requirements, including software, hardware, network infrastructure, APIs, and third-party integrations. Includes considerations for scalability, security, and performance.
* **Assessment of the Feasibility of Implementing the Required Technology (20 points)**:
  + **Basic (10 points)**: Mentions the feasibility of implementation but lacks supporting details.
  + **Above Average (15 points)**: Explores feasibility with reasonable attention to potential obstacles but does not address all technical risks or mitigation strategies.
  + **Excellent (20 points)**: In-depth assessment of the feasibility of implementation, including technical risks, alternative approaches, and strategies for overcoming challenges. Also addresses potential future technological advancements.

**Challenging Component**: Include a **risk vs. reward analysis**, explaining why certain technologies were chosen over others, and the trade-offs involved.

#### **Operational Feasibility (40 points)**

* **Analysis of the Operational Impact of the Proposed Solution on Existing Processes (20 points)**:
  + **Basic (10 points)**: Provides a general overview of how the solution will impact existing processes but lacks specifics.
  + **Above Average (15 points)**: Provides a detailed explanation of how the software solution will impact operations but misses potential ripple effects or downstream impacts.
  + **Excellent (20 points)**: Comprehensive analysis of the operational impact, including how the solution will change workflows, roles, and responsibilities. Considers the effect on productivity, training, and adoption by users.
* **Identification of Potential Challenges and Benefits in the Operational Context (20 points)**:
  + **Basic (10 points)**: Identifies some operational challenges but lacks thorough analysis.
  + **Above Average (15 points)**: Identifies key challenges and benefits but may overlook some operational risks or understate potential benefits.
  + **Excellent (20 points)**: Thoroughly identifies all potential operational challenges (e.g., user resistance, need for new infrastructure, training) and benefits (e.g., increased efficiency, cost savings). Also includes strategies for managing these challenges.

**Challenging Component**: Include a **transition plan** or **change management strategy** outlining how the solution will be introduced to the organization, including training programs, user adoption strategies, and operational support.

#### **Economic Feasibility (20 points)**

* **Estimation of the Economic Viability of the Project (10 points)**:
  + **Basic (5 points)**: Provides a rough estimate of project costs without much detail or justification.
  + **Above Average (8 points)**: Provides a detailed cost estimate with some breakdowns but lacks comprehensive consideration of hidden costs or future expenses.
  + **Excellent (10 points)**: Provides a thorough breakdown of all project costs, including development, testing, maintenance, and operational expenses. Considers both short-term and long-term costs, including any potential future expenses for scaling or upgrades.
* **Consideration of Resource Availability, Potential Return on Investment (ROI), and Cost-Benefit Analysis (10 points)**:
  + **Basic (5 points)**: Mentions ROI and resource availability but does not explore them in depth.
  + **Above Average (8 points)**: Provides reasonable attention to ROI and cost-benefit analysis but lacks depth or detailed calculations.
  + **Excellent (10 points)**: Comprehensive cost-benefit analysis that includes ROI calculations, potential payback period, and resource allocation.

### **Solution Proposal (100 points)**

#### **Solution Overview (40 points)**

* **Comprehensive Description of the Proposed Software Solution (20 points)**:
  + **Basic (10 points)**: General description of the solution without detailed explanation or clarity.
  + **Above Average (15 points)**: Clear description of the solution, with some details about how it functions but lacks consideration of edge cases or future scalability.
  + **Excellent (20 points)**: Thorough description of the solution, with detailed insights into how it functions, its architecture, and the long-term vision for the software. Addresses not just the core idea but also considerations for scalability, security, and integration with other systems.
* **Explanation of How It Addresses the Identified Problem or Opportunity (20 points)**:
  + **Basic (10 points)**: Vaguely explains how the solution addresses the problem but lacks clarity or real-world relevance.
  + **Above Average (15 points)**: Provides a reasonable explanation, linking the solution to the identified problem but lacking depth in how the solution fully solves or mitigates the issue.
  + **Excellent (20 points)**: Clearly explains how the solution directly addresses the problem or opportunity, providing data or use cases that illustrate the effectiveness of the software. The explanation includes a detailed analysis of how the solution improves upon existing methods or alternatives.

#### **Key Features and Functionalities (40 points)**

* **Detailed Listing of the Essential Features and Functionalities (20 points)**:
  + **Basic (10 points)**: Lists some features but lacks detail or consideration of user needs.
  + **Above Average (15 points)**: Provides a list of features, with some explanation of how they meet user needs, but misses some key features or does not prioritize features effectively.
  + **Excellent (20 points)**: Provides a comprehensive list of all essential features and functionalities, prioritizing them based on user needs, technical feasibility, and market demand. The explanation includes the rationale behind each feature and its importance to the solution.
* **Use Cases or Scenarios Illustrating How Users Will Interact with the Solution (20 points)**:
  + **Basic (10 points)**: Provides a simple use case with limited detail or user interaction.
  + **Above Average (15 points)**: Provides 1-2 detailed use cases but lacks variety in user scenarios or does not fully explore edge cases or different user roles.
  + **Excellent (20 points)**: Provides multiple, diverse use cases or user scenarios, showing how different types of users will interact with the software. Each use case covers various interactions, edge cases, and potential challenges the users might face.

**Challenging Component**: Require students to create **a diagram explaining** **process flows** for key use cases, showing how interactions are happening between the user and the system.

#### **Benefits and Impact (20 points)**

* **Clear Articulation of the Benefits that Users and Stakeholders Will Derive from the Solution (10 points)**:
  + **Basic (5 points)**: Mentions some general benefits but lacks specifics or clarity.
  + **Above Average (8 points)**: Clearly articulates the benefits but lacks consideration of different stakeholder groups or long-term benefits.
  + **Excellent (10 points)**: Thoroughly explains how the solution will benefit both users and stakeholders in a meaningful way, considering different stakeholder groups (e.g., end-users, managers, customers). Also considers short-term and long-term benefits (e.g., cost savings, improved efficiency, better user experience).
* **Expected Impact on the Target Audience and the Broader Domain (10 points)**:
  + **Basic (5 points)**: General mention of the impact but lacks detail or depth.
  + **Above Average (8 points)**: Reasonable analysis of the impact on the target audience but misses potential broader implications in the market or industry.
  + **Excellent (10 points)**: Comprehensive analysis of how the solution will impact the target audience, as well as broader industry trends, business processes, or societal issues. Includes both short-term and long-term impacts.

### **Project Plan (WBS) (100 points)**

#### **Project Timeline (40 points)**

* **Gantt Chart or Timeline Illustrating the Key Phases and Milestones (20 points)**:
  + **Basic (10 points)**: Provides a basic timeline with major milestones but lacks detail.
  + **Above Average (15 points)**: Creates a reasonably detailed Gantt chart with phases and milestones but might lack time specificity or dependencies.
  + **Excellent (20 points)**: Provides a detailed Gantt chart or timeline, covering all key phases, tasks, and milestones. Includes consideration of task duration, dependencies, and alignment with project objectives.
* **Allocation of Time to Each Project Phase (20 points)**:
  + **Basic (10 points)**: Time allocated to phases is general or lacks specificity.
  + **Above Average (15 points)**: Time allocated to phases is reasonable but may lack justification or be unevenly distributed.
  + **Excellent (20 points)**: Time allocated to each phase is realistic, justified based on task complexity, and considers development time and other factors.

#### **Milestones and Deliverables (40 points)**

* **Identification and Description of Major Project Milestones (20 points)**:
  + **Basic (10 points)**: Identifies general milestones without much detail or explanation.
  + **Above Average (15 points)**: Provides milestones with descriptions but may lack clarity on how these contribute to the overall project.
  + **Excellent (20 points)**: Thorough identification and description of all major milestones, including clear criteria for completion, dependencies, and alignment with project phases.
* **Listing of Deliverables at Each Project Phase (20 points)**:
  + **Basic (10 points)**: Provides a basic list of deliverables without much detail.
  + **Above Average (15 points)**: Provides a list of deliverables with some explanation but lacks clarity or misses key deliverables.
  + **Excellent (20 points)**: Comprehensive list of deliverables, with detailed descriptions of what each includes, how it will be delivered, and how it contributes to the project's success.

**Challenging Component**: Provide a **detailed task breakdown** for each deliverable in their GitHub/JIRA system. Each deliverable should be divided into tasks, assigned to team members, and tracked throughout the project. **Estimate the effort for each task in hours or story points** (if using agile methodology) within their GitHub/JIRA tickets.

### 6. **Risk Assessment and Mitigation (100 points)**

#### **Risk Identification (40 points)**

* **Comprehensive List of Potential Risks Associated with the Project (20 points)**:
  + **Basic (10 points)**: Identifies a few general risks but lacks detail or variety in types of risks.
  + **Above Average (15 points)**: Identifies several relevant risks, with some variety, but lacks depth or is missing key risks in important categories.
  + **Excellent (20 points)**: Provides a thorough list of all relevant risks, covering multiple categories (technical, operational, financial, environmental, etc.). Each risk is described with enough detail to understand its context and relevance to the project.
* **Categorization of Risks (20 points)**:
  + **Basic (10 points)**: Risks are categorized generally, but some categories may be missing or irrelevant.
  + **Above Average (15 points)**: Risks are categorized effectively, but the rationale behind each category is not fully explained.
  + **Excellent (20 points)**: Risks are comprehensively categorized (technical, operational, financial, market, environmental, etc.), with a clear explanation for each category and its relevance to the specific project. Includes a holistic approach to identifying both internal and external risks.

#### **Risk Impact Analysis (40 points)**

* **Assessment of the Potential Impact of Each Identified Risk on the Project (20 points)**:
  + **Basic (10 points)**: General impact of risks is mentioned but lacks specifics on how they would affect the project.
  + **Above Average (15 points)**: Reasonable analysis of the impact of risks but lacks a detailed explanation or prioritization.
  + **Excellent (20 points)**: Comprehensive assessment of each risk’s potential impact, including specific metrics (e.g., cost, time, quality). Considers both short-term and long-term consequences for each risk.
* **Prioritization of Risks Based on Severity and Likelihood (20 points)**:
  + **Basic (10 points)**: Risks are prioritized, but with no clear methodology or justification for their ranking.
  + **Above Average (15 points)**: Risks are prioritized with some explanation but lacks a robust method for determining severity and likelihood.
  + **Excellent (20 points)**: Risks are prioritized using a structured methodology (e.g., probability × impact matrix), with clear justification for how severity and likelihood were determined. The approach should be backed by data or rationale tied to project characteristics.

#### **Risk Mitigation Strategies (20 points)**

* **Development of Strategies to Mitigate or Minimize the Impact of Identified Risks (10 points)**:
  + **Basic (5 points)**: Provides general mitigation strategies but lacks specificity or depth.
  + **Above Average (8 points)**: Provides reasonable mitigation strategies but lacks clear connections between risks and the strategies to address them.
  + **Excellent (10 points)**: Provides detailed and specific mitigation strategies for each identified risk. The strategies are practical, actionable, and directly related to the nature of the risk. Includes consideration of risk transfer, avoidance, reduction, or acceptance, depending on the situation.
* **Contingency Plans for Addressing Unforeseen Challenges (10 points)**:
  + **Basic (5 points)**: Mentions a general contingency plan but lacks specifics.
  + **Above Average (8 points)**: Provides reasonable contingency plans for identified risks but lacks consideration of unanticipated challenges.
  + **Excellent (10 points)**: Provides a comprehensive contingency plan that addresses both identified risks and potential unforeseen challenges. The contingency plan is practical, considering possible resource reallocations, timeline adjustments, and additional safeguards.

**Challenging Component**: Require students to propose **alternative strategies** for the top three risks, including both primary and backup mitigation strategies. Think of contingency plans and evaluate multiple approaches to managing risks.

### **7. Budgeting (100 points)**

#### **Cost Categories (40 points)**

* **Breakdown of the Budget into Categories Such as Development, Testing, Marketing, and Ongoing Maintenance (20 points)**:
  + **Basic (10 points)**: Provides a general budget breakdown but lacks specificity or important categories.
  + **Above Average (15 points)**: Provides a reasonably detailed breakdown with relevant categories but may miss specific subcategories or over/underestimate certain areas.
  + **Excellent (20 points)**: Comprehensive breakdown of the budget into all relevant categories, including development, testing, marketing, ongoing maintenance, and more (e.g., deployment, customer support). Each category is thoroughly justified with real-world considerations.
* **Allocation of Funds to Each Category (20 points)**:
  + **Basic (10 points)**: Allocates funds generally but lacks explanation or justification for amounts.
  + **Above Average (15 points)**: Allocates funds reasonably to each category, with some justification, but may not fully account for all expenses or risks.
  + **Excellent (20 points)**: Provides a clear, data-driven allocation of funds to each category based on specific needs, industry standards, or project scope. Includes a justification for each allocation, supported by research or experience.

**Challenging Component**: Require students to create a **detailed subcategory breakdown** within each major category (e.g., development could include front-end, back-end, database, and API development).

#### **Resource Costing (40 points)**

* **Estimation of Costs Associated with Human Resources, Technology, and Any External Services Required (20 points)**:
  + **Basic (10 points)**: Provides general estimates but lacks detail or does not include all necessary resources.
  + **Above Average (15 points)**: Provides reasonable estimates for human resources, technology, and external services, but may miss some critical costs or make over-generalized assumptions.
  + **Excellent (20 points)**: Provides a comprehensive estimate of all resource costs, including human resources (developers, testers, project managers), technology (software licenses, cloud services, infrastructure), and external services (consultants, legal fees, marketing). The estimates are based on real-world data or industry benchmarks.
* **Detailed Calculation of Resource Costs (20 points)**:
  + **Basic (10 points)**: Provides a general calculation of resource costs but lacks depth or clarity.
  + **Above Average (15 points)**: Provides reasonably detailed cost calculations but may miss some resource categories or not fully account for variable costs.
  + **Excellent (20 points)**: Thorough and accurate calculation of resource costs, including hourly/daily rates for human resources, license fees for technology, and costs for external services. Each calculation is detailed, showing how the final amounts were derived (e.g., estimated number of hours × hourly rate for developers).

#### **Contingency Budget (20 points)**

* **Allocation of a Contingency Budget for Unforeseen Expenses (10 points)**:
  + **Basic (5 points)**: Provides a general contingency budget without clear reasoning or detailed allocation.
  + **Above Average (8 points)**: Provides a reasonable contingency budget with some justification, but the allocation may be too low or high based on project risks.
  + **Excellent (10 points)**: Provides a well-reasoned, data-driven contingency budget, with clear justification based on project risks, resource needs, and potential delays or obstacles. The contingency budget is balanced and appropriate for the size and complexity of the project.
* **Explanation of the Rationale Behind the Contingency Budget (10 points)**:
  + **Basic (5 points)**: Provides a general explanation but lacks detail or specificity.
  + **Above Average (8 points)**: Provides a reasonable explanation of the contingency budget but may miss some key risks or fail to tie the budget back to specific project areas.
  + **Excellent (10 points)**: Thoroughly explains the rationale for the contingency budget, including a detailed analysis of potential risks and how the contingency funds will be used if necessary. Connects the budget allocation to specific project phases or high-risk activities.

Deliverable-3

**8. Presentation and Justification**

**Total: 100 points**

* Introduction (10 points):
  + Brief overview of the problem or opportunity and the proposed solution.
  + Hook or attention-grabbing introduction.
* Market Justification (15 points):
  + Presentation of market analysis findings.
  + Justification of the project's relevance and potential success in the market.
* Feasibility and Viability (15 points):
  + Highlights from the feasibility study, emphasizing technical, operational, and economic viability.
  + Visual aids to support key feasibility points.
* Solution Highlights (15 points):
  + Visual representation of key features and functionalities.
  + Demonstrations or prototypes if applicable.
* Project Plan Overview (10 points):
  + Summary of the project plan, emphasizing timelines, milestones, and resource allocation.
  + Visualization of the project timeline.
* Risk Management Overview (10 points):
  + Highlights from the risk assessment and mitigation plan.
  + Emphasis on strategies in place to address potential challenges.
* Budget Overview (10 points):
  + Presentation of the budget breakdown.
  + Clear articulation of resource allocation and the contingency budget.
* Conclusion and Call to Action (10 points):
  + Summary of key points.
  + Call to action or next steps for stakeholders.

**The projects’ ideas**

Here are some project ideas that groups can choose from for the "Innovative Software Solution Proposal" project:

1. **Disaster Relief Resource Allocation System:**

Develop a platform that optimizes the distribution of relief resources like food, medical supplies, and shelter in real-time, based on demand, location, and available inventory during disasters.

1. **Carbon Footprint Tracker for Businesses:**

A platform that helps businesses track their carbon footprint, offering insights and recommendations for reducing emissions. The system could use input from business activities such as transportation, energy consumption, and waste production.

1. **Smart Waste Collection System:**

A smart waste management platform that monitors fill levels of trash bins and optimizes waste collection routes. The system would provide real-time data and automated route planning for waste collection trucks.

1. **Crowdsourced Mental Health Data Platform:**

Build a platform that allows users to anonymously share their mental health experiences, providing aggregated insights to healthcare providers and researchers to improve mental health services.

1. **Personalized Learning Disabilities Support App:**

An app that offers personalized learning resources, exercises, and tools for students with learning disabilities. The platform could adapt to individual needs, providing targeted assistance and feedback.

1. **Circular Economy Marketplace:**

An online marketplace where businesses and individuals can sell or donate used goods that are still functional, promoting reuse and reducing waste. The platform could offer eco-friendly certifications and track users’ contributions to the circular economy.

1. **Digital Skill Training Platform for Low-Income Communities:**

Create an online platform offering free or low-cost digital skill training programs, focused on topics like computing, programming, and data analysis. The platform could partner with local businesses to offer certifications and job placement.

1. **Localized Disaster Volunteer Coordination Platform:**

A platform that organizes local volunteers during disaster recovery efforts, matching them to tasks based on skills, location, and availability. The system could track volunteer efforts and ensure efficient coordination with authorities.

1. **Food Expiration Alert System:**

Develop a smart system that tracks food expiration dates in households or grocery stores and sends alerts or suggestions for how to use near-expiry food, reducing food waste. Reduces food waste through real-time tracking and alerts.

1. **Elderly Social Engagement Platform:**

A platform that connects elderly individuals with local events, volunteer opportunities, and social activities based on their interests and location. The system could also include communication tools for staying in touch with family and friends.

1. **Autonomous Delivery Drone Management System:**

A platform that manages and optimizes the deployment of autonomous delivery drones in urban environments, ensuring safety, route efficiency, and regulatory compliance. It could include features for real-time tracking and dynamic route adjustments.

1. **Wildlife Conservation Monitoring System:**

Develop a System that tracks the endangered section of wildlife using sensors, drone imagery or GPS in real time. The system could offer animal behaviour using data analytics, migration patterns, potential threats like heat waves, wildfires, deforestation etc.

1. **Digital Healthcare Appointment Optimization:**

Build a software solution for optimizing patient-doctor appointment scheduling by using machine learning to predict no-shows and overbookings, ensuring efficient use of medical professionals’ time.

1. **Customizable Workspace Management Platform:**

Develop a software platform to allow companies to manage and optimize workspace utilization, helping employees book meeting rooms, workstations, or shared spaces based on real-time availability.

1. **Online Audit Service Platform:**

Develop a cloud-based Online Audit Service Platform that enables both individuals and companies to perform self-audits or collaborate with auditors to track and analyze financial data. The platform will offer personalized audit services tailored to different user needs, allowing individuals to audit their personal finances (expenses, income, assets) and companies to audit their operational and capital expenses, revenue, and additional income. It would generate audit reports, identify discrepancies, and provide insights to optimize financial health.

1. **Urban Green Space Management System:**

Build a system that optimizes the management of urban parks and green spaces, analyzing foot traffic, plant health, and water usage. It could provide recommendations for improving the sustainability and user experience of green spaces.

1. **Smart Wastewater Monitoring System:**

Develop a platform that gamifies the learning experience for students, making education more engaging and effective.

1. **Energy Harvesting Planning Platform:**

A platform that helps cities identify potential areas for harvesting renewable energy from various sources, such as solar, wind, and even kinetic energy from pedestrian movement. The tool would analyze geographic and urban data to recommend optimal locations for energy-harvesting installations.

1. **Citywide Event Impact Forecasting System:**

Develop a system that predicts the impact of large public events (e.g., concerts, marathons) on traffic, public transportation, and local businesses. The platform could help city authorities plan better and communicate with residents about disruptions

1. **Educational Gamification Platform:**

Develop a platform that gamifies the learning experience for students, making education more engaging and effective.

1. **Health and Wellness App:**

Create a mobile application that promotes health and wellness, offering features such as fitness tracking, nutrition planning, and mental well-being support.

1. **Elderly Care Management System:**

Design a software solution to assist in the management of elderly care, including health monitoring, medication reminders, and communication tools for caregivers.

1. **Financial Literacy App:**

Build an app that educates users on financial literacy, offering interactive modules, budgeting tools, and investment simulations.

1. **Sustainable Living Planner:**

Develop a software solution that helps users adopt sustainable practices in their daily lives, providing tips, challenges, and progress tracking.

1. **Remote Team Collaboration Platform:**

Create a platform that enhances remote team collaboration, integrating features for virtual meetings, project management, and team communication.

1. **Personalized Mental Health Support App:**

Build an app that offers personalized mental health support, including mood tracking, self-help resources, and connections to mental health professionals.

1. **Smart Home Energy Management System:**

Design a system that optimizes energy usage in smart homes, providing users with insights, recommendations, and control over their energy consumption.

1. **Community Volunteer Coordination Platform:**

Build a platform that connects volunteers with community projects, streamlining the coordination of volunteer activities and project management.

1. **Emergency Response Coordination System:**

Develop a system that facilitates communication and coordination during emergency situations, connecting first responders, authorities, and the community.

1. **Smart Parking Solution:**

Design a solution that optimizes parking space usage, providing real-time availability updates and a seamless payment system.

1. **Virtual Fitness Trainer:**

Develop an application that serves as a virtual fitness trainer, offering personalized workout plans, progress tracking, and video demonstrations.

1. **AI-Powered Personal Assistant:**

Develop a personal assistant that utilizes AI to understand and respond to user commands, schedule appointments, and provide relevant information.

1. **Chatbot for Mental Health Support:**

Create a chatbot designed to offer mental health support, providing resources, encouragement, and assistance in times of emotional distress.

1. **Automated Code Review System:**

Build an AI-powered system that analyzes code, identifies potential issues, and provides feedback to developers during the code review process.

1. **Community Skill Exchange Platform:**

Develop a platform that facilitates the exchange of skills within local communities. This project aims to create a digital space where individuals can offer their expertise in various areas, such as tutoring, language learning, gardening, or home repairs, in exchange for learning a new skill from someone else. The platform can include user profiles, a skill matching algorithm, and a feedback system to foster a supportive and collaborative community where members can share and learn from each other.

1. **Intelligent Tutoring System:**

Create an AI-driven tutoring system that adapts to individual learning styles, providing personalized lessons and feedback.

1. **Powered Resume Builder:**

Develop a tool that leverages AI to analyze user input and generate well-structured and effective resumes tailored to specific job descriptions.

1. **AI-Driven Health Monitoring App:**

Develop an app that uses AI to analyze health data, provide personalized health recommendations, and alert users to potential health concerns.

1. **Virtual Wedding Planning Concierge:**

Create a virtual platform that serves as a comprehensive wedding planning assistant. This project involves developing a system that guides couples through the wedding planning process, offering personalized recommendations for venues, vendors, and services based on their preferences and budget. The platform could include features such as a customizable checklist, real-time collaboration with vendors, and a guest management system. The goal is to provide an interactive and intuitive virtual assistant to streamline the wedding planning journey for couples.

1. **Collaborative Project Management for Creative Teams:**

Develop a collaborative project management platform tailored for creative teams, such as graphic designers, writers, and artists. The system can integrate features like real-time collaboration, version control, and task management to enhance the creative workflow.

1. **AI-Enhanced Educational Chatbot:**

Develop a chatbot powered by AI, such as ChatGPT, to assist students in their learning journey. The chatbot can answer queries related to course materials, provide additional explanations, and even offer tutoring on specific topics.

1. **AI-Based Academic Advisor:**

Create an AI-driven academic advisor system that helps students plan their academic paths, recommends courses based on their interests and career goals, and provides insights into the best strategies for academic success.

1. **Food Waste Reduction and Redistribution Platform:**

Create a software solution to address the issue of food waste by developing a platform that connects food establishments, such as restaurants and grocery stores, with local community organizations and individuals. The system can use AI algorithms to predict surplus food inventory, alerting potential recipients in real-time. Additionally, it could facilitate the coordination of food pickups and deliveries, reducing food waste and supporting community members in need. This project promotes sustainability, community engagement, and the efficient redistribution of surplus food resources.