**PART B**

**Experiment-3**

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no Black board access available)

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|  |  |
| Class: BTech Computer Engineering | Batch: B2 |
|  |  |
| Date of Experiment: 02-08-2023 | Date/Time of Submission: |
|  |  |
| Grade: |  |
|  |  |

**B.1 Feasibility Study of your project**

**Economic Feasibility**

* The website has the potential to reach a large global audience of chess players who are looking for features not offered on current platforms. This increased access presents economic upside.
* By consolidating features across multiple platforms, BetterChess.com (name not decided) reduces the need for users to pay for and manage accounts on different websites. This provides cost savings that appeal to users.
* If premium features like advanced AI models are offered, this could generate subscription revenue. Advertising could also potentially produce income.
* The development costs seem feasible for a small team to take on, especially if open source libraries are leveraged. Ongoing hosting costs need to be evaluated.
* **Cost Analysis Table (Dummy Data):**
  + **Cost Estimate**s

|  |  |  |  |
| --- | --- | --- | --- |
| **Expense** | **Unit Cost** | **Units** | **Total Cost** |
| Developer Salaries | ₹50,000/month | 4developers x 4months | ₹80,000 |
| Computing Resources | ₹30,000/month | 4months | ₹1,20,000 |
| Software Licences | ₹50,000/month | 4months | ₹2,00,000 |
| Project Management Tools | ₹5,000/month | 4months | ₹20,000 |
| **Total Development Costs** | | | ₹11,40,000 |

* + **Revenue Estimates**

|  |  |  |
| --- | --- | --- |
| **Revenue Source** | **Estimate** |  |
| Advertising | ₹5 RPM\* on 5 million impressions | ₹25,00,000 |
| Sponsorships | 2 sponsors @ ₹2,50,000 each | ₹5,00,000 |
| **Total Revenue** | | ₹30,00,000 |

\*Revenue per thousand impressions

* + **Net Project Economics**
    - **Total Development Costs:** ₹11,40,000
    - **Total Revenue:** ₹30,00,000
    - **Net Result:** ₹18,60,000 (profit)

**Technical Feasibility**

* The technologies selected - React, Python, PostgreSQL - are commonly used and provide the necessary capabilities for the features outlined.
* The team has the required web development skills for the frontend and backend work. Additional learning time is budgeted in.
* Game state management and implementing the chess engine in Python will provide valuable technical experience for the team.
* Integration between frontend and backend requires careful planning but is achievable. Open source chess engines can provide a starting point.

**Operational Feasibility**

* The features match the goal of consolidating chess capabilities into a single platform. End user workflows seem streamlined.
* AI modes address the needs of players at different skill levels to play, practice, and improve. Social features enable multiplayer games.
* Puzzles, variants and analytics provide diverse ways to engage users beyond standard gameplay. This helps retention.
* Pass and play mode for overcomes device constraints multiplayer games.
* Backend infrastructure will need monitoring and maintenance; operational processes should be defined.

**B.2 Proposed process model**

**Agile Methodology**

* An agile software development methodology would likely work well for this project given the small team size and interactive nature of building a web application.
* Some key elements:
  + **Iterative development:** Break project into smaller iterations or sprints, typically 1-2 weeks long. Deliver working software at the end of each sprint.
  + **Daily standups:** Short daily sync meeting for team to share progress, plans, and blockers. Helps coordinate work.
  + **Prioritized requirements:** Maintain a prioritized product backlog of features, stories, and bugs. Pull work into each sprint based on priority.
  + **User testing:** Conduct regular usability testing with target users to gather feedback and validate features.
  + **Continuous integration:** Automate building, testing, and merging of code changes to detect issues early.
  + **Retrospectives:** Review what went well and what can improve at the end of each sprint.

**Sprint Cadence**

* **Sprint duration:** 1 week
* **Sprint planning meeting:** Start of each sprint to define user stories for sprint
* **Daily standup:** 15 mins/day for coordination
* **Sprint review:** End of each sprint to demo completed work
* **Retrospective:** Follows sprint review to inspect and adapt

**Development Phases**

* **Design:** Figma prototypes
* Core gameplay implementation
* AI engine integration
* Multiplayer/social features
* Variants/modes
* Mobile optimization
* Launch MVP, collect feedback
* **Ongoing:** New features, improvements, bug fixes

**B.3 Conclusions:**

We have selected a production model and analysed the feasibility of the project.

**B.4 Question of curiosity: How Feasibility study help us in software development?**

* A feasibility study plays a crucial role in software development by helping assess the practicality and viability of a software project before proceeding with full-scale development.
* It is a systematic analysis and evaluation of the project's potential to determine whether it is worth pursuing and if it aligns with the organization's goals and resources.
* Here are some ways in which a feasibility study helps in software development:
  + **Identifying Project Viability:** The feasibility study helps determine if the software project is feasible from various perspectives, such as technical, economic, legal, operational, and scheduling. It allows stakeholders to make informed decisions about whether to proceed with the project or not.
  + **Resource Allocation:** By assessing the project's feasibility, organizations can allocate resources more effectively. If the study reveals that the project is not viable, the resources can be diverted to more promising projects.
  + **Risk Assessment:** A feasibility study helps in identifying potential risks and challenges associated with the software project. It allows stakeholders to develop risk mitigation strategies and make informed decisions to minimize project failure.
  + **Cost Estimation:** Through the feasibility study, project stakeholders can get an idea of the overall cost of the software development, including development, testing, deployment, maintenance, and operational costs. This aids in budgeting and financial planning.
  + **Timeframe and Schedule:** The study helps in setting realistic timelines and schedules for the software development process. It ensures that the project can be completed within a reasonable timeframe.
  + **Technical Feasibility:** The study assesses whether the required technology and infrastructure are available and capable of supporting the software's development and operation. It helps identify potential technical challenges and the need for any specialized resources or skills.
  + **Market Analysis:** In cases where the software is intended for the market, a feasibility study includes market analysis. This involves studying the target audience, competitors, and potential demand for the software, helping the organization determine if there is a market need for the product.
  + **Legal and Compliance Considerations:** The feasibility study examines legal and regulatory factors that may impact the software project. It ensures that the project adheres to relevant laws, licenses, and intellectual property rights.

Overall, a feasibility study serves as a critical initial step in software development, providing valuable insights to stakeholders and helping them make informed decisions about the project's potential success and its alignment with the organization's goals. By conducting a thorough feasibility study, organizations can minimize risks, optimize resource allocation, and increase the chances of delivering a successful software product.