Moneyball: Dashboard Showing the Market Value of Football Players

Presented by

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Date:
29/03/2023

Class 1 Group 5

Project Aim: (Joseph)

The main aim for our project was to build a web-based dashboard system with an algorithm to display the impact of the future 5 games expected results on a player's potential transfer value using a CSV file as our initial input.

We have chosen this to be our aim as we believe it correctly summarizes the given brief in a way that is easy to understand and encapsulates everything needed to be captured by our system.

Project Objectives: (Arthur)

- **Objective 1**: To build a dynamic and stylistic web-based front end using HTML5, JavaScript and CSS at least 4 weeks before the project deadline.
  Measure: Displays well on different browsers, without compatibility issues. Easily readable with desirable choice of font size and colours. Smart design choices and easy to navigate.
- **Objective 2:** To take a CSV file as input and translate into working database using SQL at least 3 weeks before the project deadline.
  Measure: CSV translated to SQL for use.
- **Objective 3:** To process data from the database using the given price calculation formula and display the data on our dashboard at least 2 weeks before the project deadline.
  Measure: How correct/complete the desired data is displayed to the user.
- **Objective 4:** To maintain constant progress during development within the allocated time utilizing productive weekly meetings and communication with stakeholders. This will be over the entire period before the project deadline.
  Measure: Check the project maintains a steady flow of progress, by comparing recorded meeting logs with the Gantt chart, previous meeting logs and stakeholder feedback.

Requirements – Functional (MoSCoW) (Tommy)

- Create a usable web-based dashboard. **(M)**
- Calculate the players prices by the equation: Players current weekly wage * Weeks left in players contract * Players win percentage rate **(M)**
- Create and display graphs using the player data generated. **(M)**
- Visualise the prices of players before and after their next 5 games, one future game at a time. **(M)**
- Be able to interpret a CSV input file and translate it into a list of players. **(M)**

Requirements - Non-Functional (MoSCoW) (Judah)

- Have a functional database to store and process our data. **(M)**
- Ensure the dashboard has satisfactory performance on both front-end and back-end. **(M)**
- Ensure version control through Git to circumvent changes breaking the entire project. **(M)**
- Ensure charts are clearly separated and ordered in a logical manner. **(M)**
- Have a login system for admin to add or remove players/clubs **(S)**
- Have a separate table for the clubs. **(S)**
- Create a dynamic page so that the data transmits well to new screen sizes and browsers. **(S)**
- The ability to filter, search and sort players/clubs shown by factors such as club, salary, location, etc. **(S)**

Requirements - Non-Functional (MoSCoW) (Joseph)

- Visualise the original market value and the change in market value of a club after each game. **(S)**
- The ability to expand player's and club's details and bring up a page of in-depth information and graphs based on the data held on that player or club. **(S)**
- Home page graphs showing players with the highest expected increase and the clubs with the highest value. **(S)**
- Make sure text is easily readable in both size and colour for accessibility. **(S)**
- Have user accounts, user accounts can favourite/watch players to create custom tables. **(C)**
- Create a chat bot to help with user's queries. **(W)**
- Light and dark mode. **(W)**

Project Plan (Arthur)

- Diagrams Used: Gantt Chart, Risk Register, Responsibility Matrix
- Software Used: Click-Up (Meeting Organisation)
- For the planning of our project, we wanted to make sure we had quality diagrams which we could use throughout all other stages of the project's development. For example, we wanted a risk register which would capture close to all the potential risks we would encounter, so we could refer to it with confidence further down the line.
- We also wanted to record our meetings in detail, this was to prove it was an even spread of work, but also because it made it so much easier to track project progress, especially when comparing progress with the Gantt chart and evaluating time-related risks. It also ensured each member knew exactly what to do for the week and we had a general idea of the next week's meeting and tasks by discussing the near future at each meeting. The meetings also allowed us to make sure tasks were varied for each member, such as changing who worked on the report each week.

Weekly Work Breakdown (Tommy)

- To show who was allocated which tasks and the results of each meeting we used ClickUp for the tasks and simply stored meeting notes within a word document. The meeting notes also included the weekly risk evaluation (from Week 4) and Gantt chart comparison (from Week 2). Alongside ClickUp, we also used a responsibility matrix to help track task allocation.

General Weekly Breakdown (Example from Week 1)

- Meeting Notes
- ClickUp Tasks
- Responsibility Matrix

Week 1

Attendees:

Arthur, Judah, Joseph, Tommy

Weekly Roles:

Arthur, Judah, Joseph (Leader), Tommy

Topics of Discussion:

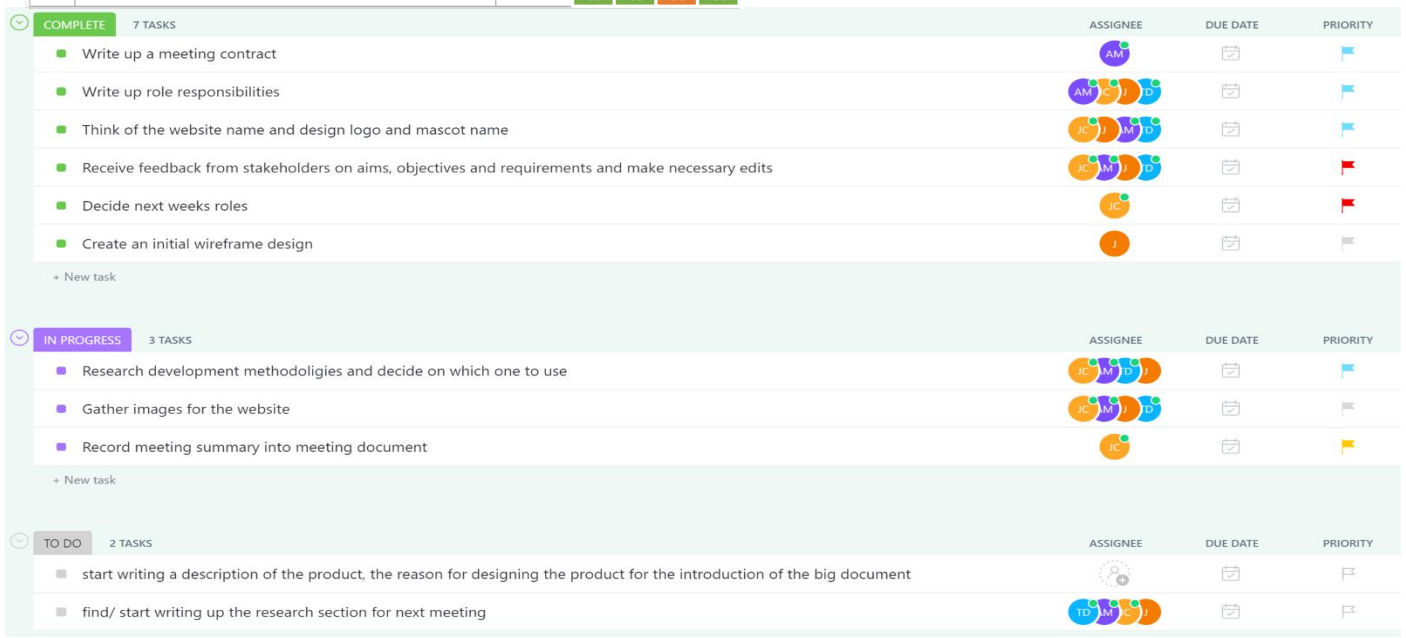
- Deciding on which project brief to pick
- Picking weekly roles
- Define the roles/expectations of each member
- Initial Project Aims, Objectives and Requirements
- Review objectives with SMART in mind
- Possible development methodologies
- How to document meetings
- Next week's leader
- initial wireframe design
- logo ideas

Summary:

We started by deciding on which project brief out of the 6 possible, we looked at briefs 1, 3, 5 and 6. The final decision made was project 6, Market value of football players Project. Discussed who would be the team leader for the week and settled on Joseph for week 1 and Judah for week 2. Arthur oversees writing up a contract for our commitments to the weekly meetings, and Judah oversees the initial wireframe design keeping a dashboard design in mind. Writing up our Project aims, objectives and requirements with SMART objectives into Project Aim and Objectives.docx and Project Requirements.docx, investigated flask dashboard bootstraps which also helped us design the wireframe. Researched possible meeting note apps to help organize and structure our meeting logs, and we settled on ClickUp. Then we got feedback from our stakeholders on our aims, objectives and requirements, and rediscussed and improved them. Got told how to set up the introduction and research section of the final document, and discussed which section of the project each member would research.

		MEMBERS	Judah Tilbury	Arthur Milner	Joseph Cauvy-Foster	Tommy DiClaudio
	Deliverable or Task	Status	Project Team			
	Week 1					
	Pick Project Brief	Complete	R	R	A	R
	Create Meeting Contract	Complete	C	R	A	C
	Create Role Responsibilities	Complete	R	R	A	R
	Decide Next Weeks Roles	Complete	I	I	A	I
	Create initial Wireframe Design	Complete	R	I	A	I
	Research Development Methodologies	In Progress	R	R	A	R
	Finish Introduction Draft	To Do	R	R	A	R
	Find sources for Literature Review	To Do	R	R	A	R

D	Driver	Assists those who are responsible for a task.
R	Responsible	Assigned to complete the task or deliverable.
A	Accountable	Has final decision-making authority and accountability for completion. Only 1 per task.
S	Support	Provides support during implementation.
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action.
I	Informed	Must be informed after a decision or action.



General Weekly Breakdown (Example from Week 5)

- Meeting Notes
- ClickUp Tasks
- Responsibility Matrix

Week 5					
update Gantt chart	Complete	I	I	A	I
find source for design patterns of dashboard research	Complete	R	I	A	I
translate wireframes into initial front end of website	Complete	I	R	A	I
update use case diagram	Complete	I	I	A	I
create ERD diagram	Complete	I	I	A	I
write up project planning & team roles section	Complete	I	R	A	I
review eachothers research	Complete	R	R	A	R
link reqiurments to sources	Complete	I	R	A	I
move finished diagrams and tables into appendix	Complete	I	R	A	I
find source for methodology/ comparing methodologies	To Do	R	R	A	R
find source for cost of project	To Do	R	R	A	R
complete test plan first draft	Complete	R	R	A	R
create login system	To Do	I	I	A	R
start methodology write up	To Do	R	R	A	R
create file to convert csv file into database	Complete	I	R	A	I
connect database and pull values to put in tables	Complete	I	I	A	I
create tables in players page and clubs page	Complete	R	I	A	I
link player names to player information page on that player	Complete	I	R	A	I
create graph for players and clubs	Complete	I	R	A	I
change graph style for accesability	Complete	I	I	A	R
make player and club tables sortable	Complete	I	I	A	R
create graphs on home page	Complete	I	I	A	I
calculate club value	Complete	I	R	A	I
create graphs for clubs page	Complete	R	I	A	I
added dynamic info to clubs page	Complete	R	I	A	I

Week 5

Attendees:

Arthur, Judah, Joseph, Tommy

Weekly Roles:

Arthur, Judah, Joseph (Leader), Tommy

Topics of Discussion:

- Lecture: Cost evaluation
- Reviewed each others research sections
- Updating Gantt chart
- Source for design pattern and dashboard research
- Creating initial front end and back end of website
- Create database from csv
- Create graphs and tables from database
- Creating an ERD diagram
- Write up project planning and team roles section
- Research what a test plan is and create a template
- Finding links between requirements and sources
- Receive feedback on whole project so far from tutor

Summary:

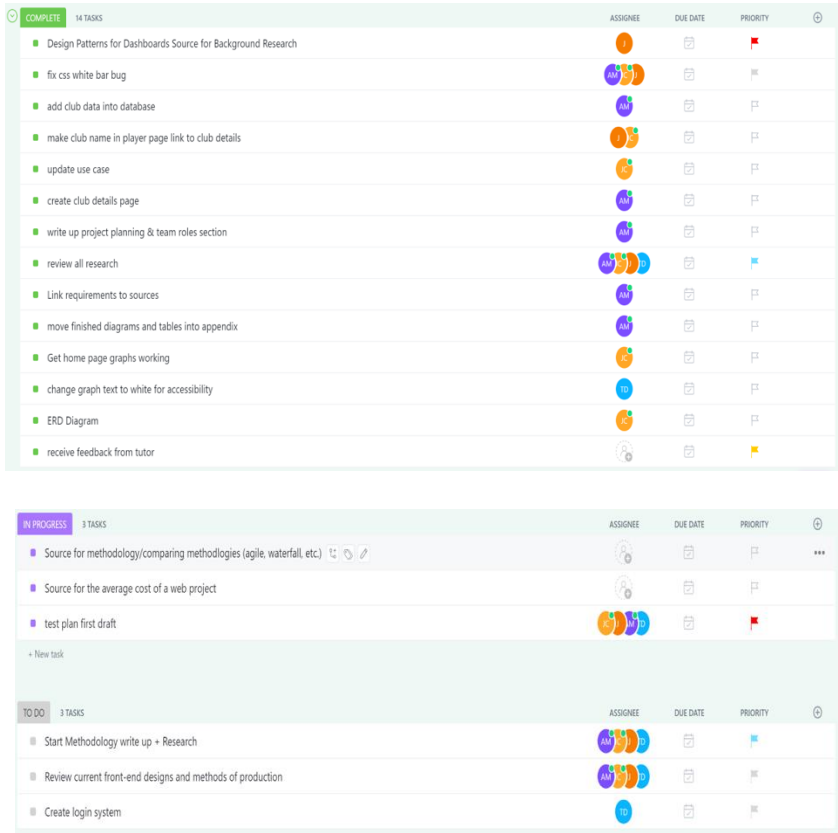
This week we started by reviewing the research done by each member presenting their findings to the group. We finished our planning section of the project report and therefore made a start on the front-end and back-end development and have completed the home page, players pages, clubs' pages and database. We also found and referenced a source for our dashboard design pattern research section. We researched what a test plan is and created a template and added four tests to it. Then we received feedback from our tutor about our project as a whole so far.

Gannt Chart Comparison:

Overall, we are on track with the Gannt chart, but we are one week ahead of schedule when it comes to the front-end development as we have finished the initial design and just need to finalize it after we have finished the back end.

Risk Register Evaluation:

Risks remain at a low level.



Risk Register and Review (Judah)

- We created our risk register in excel, this allowed us to automatically update the risk rating across each week using the weighted average risk evaluation equation. This made it easy to update the status of the risks after each weekly re-vote as all we had to do was change everyone's probability and impact ratings as desired.
- The risk register was reviewed every week, each member revised their probability and impact ratings as necessary, and a short but detailed evaluation was given within the meeting notes following discussion within the meeting. Below are a few examples of this evaluation:

Risk Register Evaluation:

Still, there have been no risks or any setbacks that have come up other than the slight concern over the time remaining for the report's completion last week. But now that the application itself has been finalized, the report is everyone's focus and plenty of time is available to us so there is little to no concern here. We will still maintain risk reviews up until the deadline.

Risk Register Evaluation:

As we are making good progress and have yet to come across any major setbacks the risks remain at a low level, however, as the deadline approaches it is still important for us to maintain proper analysis of the risks, especially considering progress on the writing of the group report.

Risk Register Evaluation:

As of now, risks are at a low level and no issues have been met regarding members and the project development. Risks have been evaluated and in terms of member probability rating, we are expecting to meet some of these risks. This means that the idea of risk mitigation is continuously thought about especially for those with high probability to attempt to avoid them. This attempt of mitigation will stick with us throughout the project.

Risk Register

Risk Number	Risk status	AM	JT	JCF	TD	AM2	JT2	JCF2	TD2	Risk Description	Impact Description	Triggers	Mitigations	Risk owner
R1	4	1	1	1	1	4	4	4	4	We are late submitting the group report	We will fail the module	Illness, poor time management, poor communication	Make sure we are not falling behind the Gantt chart and plan, weekly comparison to Gantt chart.	All
R10	5.5	3	3	2	3	3	2	1	2	Project works as needed but is not sustainable	Projects achievements will be downplayed by its poor environmental performance, unethical to keep it running as is	Not researching sustainable practices, using techniques which require high memory usage	Make sure everyone knows sustainable practices and how they must be applied to the project	All
R2	4	1	1	1	1	4	4	4	4	We are late submitting the project	We will fail the module	Illness, poor time management, poor communication	Make sure we are not falling behind the Gantt chart and plan, weekly comparison to Gantt chart.	All
R3	6	1	2	2	1	4	4	4	4	Our work corrupts/is deleted	Major setback as will have to start all documentation again	Failure to consistently back-up work, method of storing work is poor	Back up word documents/files at weekly intervals.	AM
R4	4	3	1	2	2	2	2	2	2	Update to the project code breaks the project	Will have to figure out what went wrong which can be time consuming	Saving changes to code without testing first, coding without planning, good communication	Use version control with GitLab to see what has changed and revert to previous versions if necessary.	All
R5	5.25	2	1	2	2	3	3	3	3	Group member is unable to attend for an extended period	Leaves us with less resources to work with	Poor communication, disregarding mental health	Make sure all members share the knowledge of all parts of the project so being down a member has a much smaller impact.	All
R6	1.75	1	1	1	1	2	2	2	1	A member's access to internet or their computer is restricted	Will leave that member unable to help to the best of their ability	Wi-Fi maintenance works, hardware breaking	Have access to UWE computers and internet, which will mitigate the effect this would have on those members workflow	All
R7	6.1875	3	2	2	2	3	4	2	2	Strikes effect our tutorial slots	If our tutors strike or must miss a session, we may miss out on valuable face to face learning and feedback.	Poor treatment of staff, poor funding of education	Independent study and watching the prerecorded lectures should allow us to catch up as best as we can.	All
R8	4.5	2	2	2	2	3	2	2	2	Learning new software takes longer than expected	If the new software/packages we will use are highly technical it could hinder our progress	Using highly complex software, heavily technical methods to learn	Make sure we know the difficulty of the software/packages we decide to use and work consistently so that they can be learned in a timely	All
R9	4.375	2	2	2	1	3	2	2	3	Requirements are needed to be changed late into the development stage	Can be detrimental to the progress of the project as capturing wrong requirements captures an incorrect project	Poor requirement planning, rushing writing of the requirements	Make sure our requirements are carefully constructed and fully meet the projects standards to avoid having to change them	All

Main Challenges (Joseph)

- Mobile View
  - Found it a challenge going from desktop to mobile and keeping graphs legible.
- Chart.js
  - We were all unfamiliar with the package so required a good effort from all team members to learn how to use it.
- Testing
  - Particularly with unit testing, for example route testing proved difficult to do using unit testing.
- Sustainability
  - Found there were not many considerations we could make whilst keeping a lot of functionality, had to work for a balance between sustainability and functionality.

Sustainability Issues Addressed at Design Level (Arthur)

- Using a database in the 3rd normal form:
  - This allows for direct access of records, the linear search a CSV file would require takes considerably more processing power, especially in high frequencies.
- Using a small number of graphs to display a lot of information:
  - Generating a lot of graphs will cost more computing power, if we can convey the same picture of the data with a small number of graphs then we can consider the dashboard to be more sustainable.
- Using compressed images:
  - Using compressed images will lessen the footprint of the website whilst providing very little performance compromise.
- Using green/eco web hosting:
  - Also considered at the design stage, albeit briefly, was the potential for green/eco hosting of the website if we were to publish it.

Project Demo

Showcasing the final project against key requirements