Progress Report

Simulation Course

Project Title: THE SOLUTION OF A PRANDTL-MEYER EXPANSION WAVE FLOW FIELD

Group Number: 6

Group Members: Oscar González, Carlos Jaime Hermoso

Version	Deliver before end of session	Emphasis
0	20/11	Initial planning
Period 1	2711	Description of the problem and its relevance. ¿Why is this simulation important?
Period 2	4/12	Description of the maths involved in the problem Intended advanced work
Period 3	1/12	Software design: describe objects, databases, method for visualization of results
Period 4	18/12	
Final	8/1	Conclusions

Project features

Provide a list of the features of your project. In other words, what are the capabilities that will be available to the end user. Describe each capability, indicate its importance (0 = not important, 5 = very important) and try to estimate how difficult its implementation is going to be (0 = very easy, 5 = very hard). Example: [save results, save the simulation results into a text file, 4, 3].

Feature	Description	Importance	Difficulty
Heat Maps	The option to show the Prandtl-Meyer expansion as a heat map and the option for the user to choose between the property shown in it.	5	5
Tables	Tables to visualize the numerical values obtained with the mathematical model.	4	2
Variable Parameters	The user is able to choose the parameters of the simulation, or choose predefined ones.	1	5
Save Data	The possibility to save the data in a file.	3	4
Calculate Errors	With respect to Anderson's Book.	5	2

General planning

Decompose the whole project into phases (for instance, math development, research on visualization methods in WPF, report writing, etc.).

And assign a block of time to each phase. Please take into account the due dates for the different products of the projects (code, report and oral presentation).

Phase	Block of time
UML (design classes and methods before planning)	To work on in parallel with the mathematical model (It's an iterative process).
Mathematics	To work on in parallel to the UML. Until a satisfactory result is obtained (approx 2 - 3 weeks?).
WPF research / programming	Starting when a satisfactory mathematical model is achieved.
Details (ensure code stability, efficiency, user-friendliness, code explanation, etc...)	Starting once the WPF App has been programmed. To be done in parallel to the Report / Presentation.
Report / Presentation	Starting once the WPF App has been programmed. To be done in parallel to the details phase.

Planning for first week

Taking the previous lists and the project deadline into consideration, start thinking on what needs to be done first. Fill the following table with the list of tasks that you intend to do during the next week. Some example tasks may consist in studying the theory of the phenomenon you intend to simulate, developing the equations, implementing a feature, testing, creating documentation, etc. Indicate the team members responsible for each task and the date it should have been completed.

Task	Team member(s)	Due date
Do some research on the mathematical method used to calculate the Prandtl Meyer	Carlos Hermoso / Óscar González	Friday 27

Expansions		
Searching about the theoretical background of the project	Carlos Hermoso	Friday 27

Period 1: 20 November – 27 November

Activities performed during this period:

Provide a brief summary of your activities. What are the main achievements and visible results?

Understand the magnitude of the project, what mathematical tools are used, the resources available, etc...

The github repository has been created.

The program has been created and we have started to code the mathematical part of the code to ensure it is functioning correctly.

Considerations:

Discuss your progress with respect to the planned tasks for this period and with respect to the overall project, the main obstacles encountered during this period and what decisions have been made.

The week's objectives have been successfully achieved, even outdone.

Some questions about the mathematical method have arisen but we have asked the correspondent teacher and they have been partially solved.

Planning:

Indicate the tasks you intend to do during the following week.

Task	Team member(s)	Due date
Try to solve the few doubts we have		mid week
Finish the Mathematical part of the code (not validated for now, we will try to, but not sure we can achieve it.)	Óscar González	Friday 4
Pose hypothesis	Carlos Hermoso	Wednesday 2
Write the physical problem and project introduction	Carlos Hermoso	Wednesday 2

Period 2: 27 November – 4 December

Activities performed during this period:

Provide a brief summary of your activities. What are the main achievements and visible results?

The mathematical part is almost finished. The null,infinite, NaN values that appeared at the start have been corrected so the results seem valid, although unless the graphs are plotted we won't know for certain if it is really correct.

The hypotheses have been raised and chosen for further study.

The report contains the introduction and the explanation of the physical problem

Considerations:

Discuss your progress with respect to the planned tasks for this period and with respect to the overall project, the main obstacles encountered during this period and what decisions have been made.

The project has progressed as planned till the last steps, where we have found a mathematical procedure we didn't expect. That has slowed us down and in the end we haven't met the week's objectives. The time to pull the project forward has been dedicated to search info about how to solve equations in C#.

Planning:

Indicate the tasks you intend to do during the following week.

Task	Team member(s)	Due date
Write the math problem in the report	Carlos Hermoso	
Justify the hypotheses	Carlos Hermoso	
Search and implement Simple Bisection Method	Oscar Gonzalez	6/12

End the Mathematical model and make sure the results are plausible.	Oscar Gonzalez	6/12
Start searching information about how to plot the results.	Carlos Hermoso / Oscar Gonzalez	11/12

Period 3: 4 December – 11 December

Activities performed during this period:

Provide a brief summary of your activities. What are the main achievements and visible results?

Considerations:

Discuss your progress with respect to the planned tasks for this period and with respect to the overall project, the main obstacles encountered during this period and what decisions have been made.

Planning:

Indicate the tasks you intend to do during the following week.

Task	Team member(s)	Due date

Period 4: 11 December – 18 December

Activities performed during this period:

Provide a brief summary of your activities. What are the main achievements and visible results?

Considerations:

Discuss your progress with respect to the planned tasks for this period and with respect to the overall project, the main obstacles encountered during this period and what decisions have been made.

Planning:

Indicate the tasks you intend to do during the following week.

Task	Team member(s)	Due date

Final report: 18 December – 8 January

Activities performed during this period:

Provide a brief summary of your activities. What are the main achievements and visible results?

Considerations:

Discuss your progress with respect to the planned tasks for this period and with respect to the overall project, the main obstacles encountered during this period and what decisions have been made.

Final considerations:

Discuss your performance as a team. What did you do well? What was wrong? What should be improved next time?