

PaasPaasPASS - a way for student groups to sit and study together

Name and entry number of Team Member 1 -

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Other commitments during summer if any - No commitments

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Title of Your Project - CSC Exam Crux

Which of these represent your project more closely - (select one)

1. A new idea/need for which we would like to come with a solution by carrying out proof of concept studies

~~2. We have a "proof of principle" or "proof of concept" solution/prototype. We would like to build a functional prototype or come up with an implementable solution?~~

~~3. We have a functional prototype or working solution. We would like to carryout multi-user trials by deploying the same in field to refine/validate design/solution.~~

Facilitator(s) Name(s) of Faculty - Prof.Subrat Kar, 011-26591088 subrat@ee.iitd.ac.in

What is the need your project is trying to address? How did you establish the need?

The main need our project addresses is that of availability of seats in CSC during exam times. Often we decide to go to CSC in a group to study but on reaching we find that there are no seats available for all of us to sit together.

Our project tries to address this issue at a small scale, by assigning seats so that the maximum number of contiguous seats are available at all times. The problem is not trivial as one or more seats may fall empty as and when people leave, leading inevitably to fragmentation. We hope to devise an algorithm which addresses this. The problem is very similar to (almost homologous to) many packing problems - for instance, in crystallography, lattice mechanics, and resembles the file management / defragmentation issue on a hard disk (the need for 'all parts of the same file to stay together in contiguous chunks'). We may extend it (a) into other areas of practical use as well such as auditorium seating during event, crown management, optimizing flat allocation during housing allotment etc (b) to allow prior booking of seats online with estimated time of usage (this will avoid the twin disappointments of (a) arriving and finding no seats available and (b) of wasting time).

Is this a new project or continuation of prior work done? What prior work or ground work is done at the time of submission of this project proposal.

This is a totally new concept which hasn't been addressed before in this context. This is a problem which many of us face during exam time.

What are the deliverable at the end of this project?

We plan the end product to be a fully functioning unit with a control panel outside CSC (to be available with the guard who regulates entry) where the students will enter the number of seats required and then be able to check availability. If seats are available in the desired configuration, a allocation ticket will be printed out.

We plan to be able to develop the algorithm, implement it as a stand-alone system and justify its correctness.

Describe how you plan to go about accomplishing your objectives.**What is the completion criteria ? How will you know when you're done?**

Firstly we will try to come up with an algorithm to tackle this problem and then we will write the code and implement this solution by installing a panel outside the CSC. Therefore the students will be able to view the number of available seats and select the number of required seats which they want together. We will incorporate as many of the other problems faced by students (avoiding sitting next to the wall for instance), have a simple and effective user interface, check

the possible flaws to the system and come up with the algorithm and the complete program for the prototype.

The completion criteria is to get the demonstrate the algorithm to solve the problem, demonstrate it working under three categories of student loads (light load = less than 10 students per hour; medium load = 11 to 30 students per hour; heavy load = more than 30 students per hour).

We're not done until and unless this solution of ours genuinely solve the problem faced by students and we'll continue to work on this till the time we come up with an extremely useful product.

What is the contingency budget required to carry out this project ? (maximum amount is Rs 25000)

Item	Rate	Qty	Sub-total
Contingency SBC : Rs.4000; touch screen display: Rs.8000; enclosure: Rs.2000, 40-column dot matrix printer:Rs.3000 Paper rolls(x5): Rs.800 Wireless keyboard: Rs.3500 Wireless mouse: Rs.1200 Pendrive (x4) : 1000			23500
			23500

How will the contingency budget be used in your project?

We will buy a SBC with a 7" touch screen, attach it with a 40-col printer (DMP/thermal) and place the entire assembly in a see-through enclosure. This will be deployed on a pilot basis in CSC.