

A Flash Package for Coordinating Practical Examinations

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Abstract- The developed package is end-user software that handles multiple inputs. The respective colleges send number of students appearing for the particular laboratory exams, along with respective subject codes. This forms the Student database. They also send faculty available for the particular subject together with number of years of experience which constitutes the Faculty database. The total data received is to be maintained as a database. The case study here is with respect to one particular branch. The same can be extended for all other branches of any university which conducts practical examinations. Two faculties are to be allocated per batch of the practical exam of a subject, generally one internal from same college and other as external from other college (sometimes both externals). This is done considering their years of experience in that particular subject. The database related to different colleges are to be correlated and a final individual duty allotment list is created. A Graphical User Interface (GUI) is created to get the inputs from the user. The main objective is to maintain and relate database from different colleges and perform faster allocation.

Index Terms- VTU case study, Unique ID, On-Line student Update, Faculty Allocation, Sub-Regions, Unallocated Batches, Subject Expert.

1. Introduction

To design a user friendly tool for allocating faculty for conduction of practical examinations considering VTU, E&C department as a special case study. A Technical University needs a Technical Approach in resolving Problems. The project aims to provide the officer in-charge /chairman of the examinations, with a technical tool for allotment of internal and external examiners for the smooth conduct of the practical examinations. In the existing system, the allocation of faculty for engineering practical examinations in VTU is done manually. It involves one Chairman and about 4 to 5 officials to complete the allocation procedure. They maintain a chart of the subjects and faculties and do the allocation referring to the charts. The procedure lasts for about one week. This procedure is followed in every region and for every subject available in that region .Apart from the financial burden on VTU every semester, the procedure is tedious and time consuming. It is prone to errors since procedure involves a large amount of data thereby reducing the efficiency of the allocation performed. Transparency is also less in this procedure. The developed package almost nullifies all the above mentioned limitations of manual allocation and provides a best possible allotment of internal and external faculties. This package can also be applied to any examination of any university (provided with suitable databases).This package is also applicable for other applications like selecting faculty for setting the question papers for various examinations held under a university with minor modifications.

The developed package needs to be supplied with a database containing two tables: A Student Table and a Faculty Table. The package performs the allocation of both the internal and external faculties and generates final table/database containing individual allotment list for all the colleges/branches containing batches with their respective allotted internal and external faculties.

2 Databases:

Student Table:

The student table consists of the following data: city, college, subject, date, batch number, number of students in that particular batch, USN of the students in that batch, internal and external faculty column which is filled during the execution of the package. Each record is identified by a unique id generated internally to resolve ambiguities.

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Faculty Table:

The faculty table consists of the following data: faculty's name, city, college, three subjects (or less than three) handled by the faculty along with experience in those subjects and preferred city on approval by chairman. Each record is identified by a unique id generated internally to resolve ambiguities.

I have considered only E&C dept. of 32 colleges in Mysore Region for creating database. This can be extended to any number of departments and any number of colleges since the allocation algorithm remains same irrespective of number of records. I have divided Mysore region into 4 sub-regions namely Mysore, Mangalore, Hassan and Shimoga. These sub-regions include colleges in and around them. For example Mysore region includes colleges in Mysore, Mandya, Chamarajanagar, etc within about 50-60Km distance from Mysore. These sub-regions facilitates allocation of female faculty as external, within the sub-region provided their preferred city is set to the respective region so that it avoids long distance travelling, specially for female faculties. Preferred city can also be set for other faculties provided their request is genuine and approved by the chairman. It is optional and not mandatory to set the preferred city for each faculty.

Faculty Allocation Algorithm:

The allocation algorithm is based on seniority of the faculty. During initial part of execution all the internal examiners are allotted which is then followed by the external allocation. The main condition for allocation to a particular subject is that the faculty must have experience in handling the considered subject.

3 Internal Faculty Allocations:

It involves the following steps:

1. Search for faculty in same college & city as that of the student table record (batch) under consideration .Pick the senior-most
If not found? Go to step 2.
2. Search for faculty in same city as that of the student table record (batch) under consideration. Pick the senior-most
If not found? Go to step 3.

- Search for faculty in any city & college which means to allocate any faculty with relevant experience that particular subject provided that faculty is available. Pick the senior-most

4. External Faculty Allocation:

It involves the following steps:

- Search for a faculty with the same preferred city & make sure faculty is not from the same college (& city) as that of the student table record (batch) under consideration. Pick the senior-most.
If not found? Go to step 2.
- Do not consider faculty's preferred city & still make sure faculty is not from same college (& city) as that of the student table record (batch) under consideration. Pick the senior-most
If not found? Go to step 3.
- Target faculty's preferred city not considered and college & city also not considered which means to allocate any faculty with relevant experience that particular subject provided that faculty is available. Pick the senior-most.

5 GRAPHICAL USER INTERFACE:

The main form consists of

- Allocate faculty's button.
- Clear button used to clear the whole database. It is password protected.
- Allocations tab-which shows when clicked the allocation based on the city, college and subject selected in the choice given at the bottom of the form. The refresh button when pressed displays the allocation.
- Faculties allotted tab-which when clicked shows the allocations for a particular faculty (examiner).
- Faculty's free tab which clicked shows a list of faculties (examiners) who are free on a particular date.

RESULTS OBTAINED

Student Table:

Microsoft SQL Server Management Studio Express											
File Edit View Query Designer Tools Windows Community Help											
Open Query Change Type											
Table - dbo.Student											
	idStud	City	College	Subject	Date	Time	BatchNo	Students	USN	Internal_Ex	External_Ex
1	Hassan	441	ECL 38	2010/2009...	8.00-11.00	B1	10	4a47e0c01,002,003,004...	0	0	
6	Hassan	441	ECL 38	2010/2009...	11.00-2.00	B2	10	4a47e0c01,012,013,014...	0	0	
7	Hassan	441	ECL 38	2010/2009...	2.00-5.00	B3	10	4a47e0c01,022,023,024...	0	0	
8	Hassan	441	ECL 38	2011/2009...	8.00-11.00	B4	10	4a47e0c01,032,033,034...	0	0	
9	Hassan	441	ECL 38	2011/2009...	11.00-2.00	B5	10	4a47e0c01,042,043,044...	0	0	
10	Hassan	441	ECL 38	2011/2009...	2.00-5.00	B6	10	4a47e0c01,052,053,054...	0	0	
11	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,062,063,064...	0	0	
12	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,072,073,074...	0	0	
13	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,082,083,084...	0	0	
14	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,092,093,094...	0	0	
19	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,102,103,104...	0	0	
20	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,112,113,114...	0	0	
25	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,122,123,124...	0	0	
26	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,132,133,134...	0	0	
27	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,142,143,144...	0	0	
28	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,152,153,154...	0	0	
29	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,162,163,164...	0	0	
30	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,172,173,174...	0	0	
31	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,182,183,184...	0	0	
34	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,192,193,194...	0	0	
35	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,202,203,204...	0	0	
36	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,212,213,214...	0	0	
37	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,222,223,224...	0	0	
38	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,232,233,234...	0	0	
40	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,242,243,244...	0	0	
41	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,252,253,254...	0	0	
42	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,262,263,264...	0	0	
43	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,272,273,274...	0	0	
44	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,282,283,284...	0	0	
45	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,292,293,294...	0	0	
46	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,302,303,304...	0	0	
47	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,312,313,314...	0	0	
48	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,322,323,324...	0	0	
49	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,332,333,334...	0	0	
50	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,342,343,344...	0	0	
51	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,352,353,354...	0	0	
52	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,362,363,364...	0	0	
53	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,372,373,374...	0	0	
54	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,382,383,384...	0	0	
55	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,392,393,394...	0	0	
56	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,402,403,404...	0	0	
57	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,412,413,414...	0	0	
58	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,422,423,424...	0	0	
59	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,432,433,434...	0	0	
60	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,442,443,444...	0	0	
61	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,452,453,454...	0	0	
62	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,462,463,464...	0	0	
63	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,472,473,474...	0	0	
64	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,482,483,484...	0	0	
65	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,492,493,494...	0	0	
66	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,502,503,504...	0	0	
67	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,512,513,514...	0	0	
68	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,522,523,524...	0	0	
69	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,532,533,534...	0	0	
70	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,542,543,544...	0	0	
71	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,552,553,554...	0	0	
72	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,562,563,564...	0	0	
73	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,572,573,574...	0	0	
74	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,582,583,584...	0	0	
75	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,592,593,594...	0	0	
76	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,602,603,604...	0	0	
77	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,612,613,614...	0	0	
78	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,622,623,624...	0	0	
79	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,632,633,634...	0	0	
80	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,642,643,644...	0	0	
81	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,652,653,654...	0	0	
82	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,662,663,664...	0	0	
83	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,672,673,674...	0	0	
84	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,682,683,684...	0	0	
85	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,692,693,694...	0	0	
86	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,702,703,704...	0	0	
87	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,712,713,714...	0	0	
88	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,722,723,724...	0	0	
89	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,732,733,734...	0	0	
90	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,742,743,744...	0	0	
91	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,752,753,754...	0	0	
92	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,762,763,764...	0	0	
93	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,772,773,774...	0	0	
94	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,782,783,784...	0	0	
95	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,792,793,794...	0	0	
96	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,802,803,804...	0	0	
97	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,812,813,814...	0	0	
98	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,822,823,824...	0	0	
99	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,832,833,834...	0	0	
100	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,842,843,844...	0	0	
101	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,852,853,854...	0	0	
102	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,862,863,864...	0	0	
103	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,872,873,874...	0	0	
104	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,882,883,884...	0	0	
105	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,892,893,894...	0	0	
106	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,902,903,904...	0	0	
107	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,912,913,914...	0	0	
108	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,922,923,924...	0	0	
109	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,932,933,934...	0	0	
110	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,942,943,944...	0	0	
111	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,952,953,954...	0	0	
112	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,962,963,964...	0	0	
113	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B2	10	4a47e0c01,972,973,974...	0	0	
114	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B3	10	4a47e0c01,982,983,984...	0	0	
115	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B4	10	4a47e0c01,992,993,994...	0	0	
116	Hassan	441	ECL 37	2012/2009...	11.00-2.00	B5	10	4a47e0c01,002,003,004...	0	0	
117	Hassan	441	ECL 37	2012/2009...	2.00-5.00	B6	10	4a47e0c01,012,013,014...	0	0	
118	Hassan	441	ECL 37	2012/2009...	8.00-11.00	B1	10	4a47e0c01,022,023,024...	0	0</	

Figure 3: Main form

When allocate faculties button is clicked the GUI displays all slots have been allotted when no batches are left unallocated.

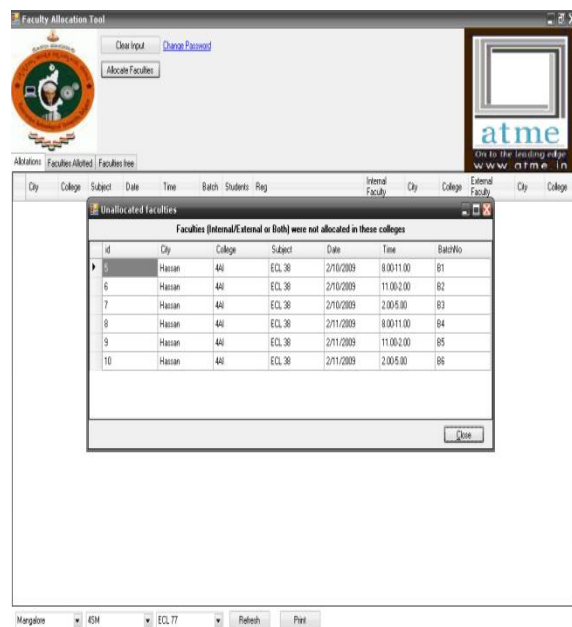


Figure 4: Unallocated Batches

When some batches are left unallocated it shows the message as shown above and displays the unallocated batches. The reasons for the batches of a subject left unallocated may be due to subjects entered wrong in database or due to the unavailability of faculty handling that particular subject.



Figure 5: Allocations

The figure above shows the allocations for Mysore city, 4VM College and ECL 38 subject. The package also has facility for printing the results by clicking on print button.

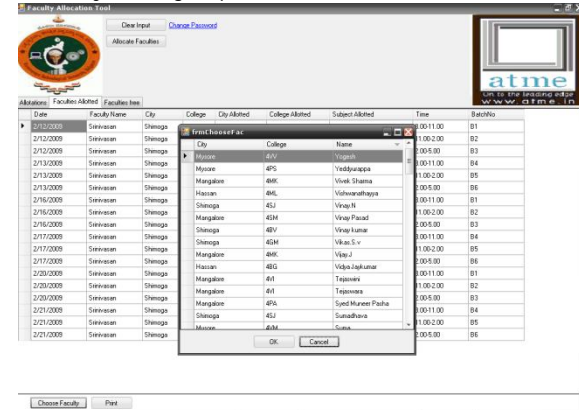


Figure 6: Choosing an individual faculty

The faculties allotted tab shows the duty allotted to a particular faculty selected so they can be intimated about their duty.

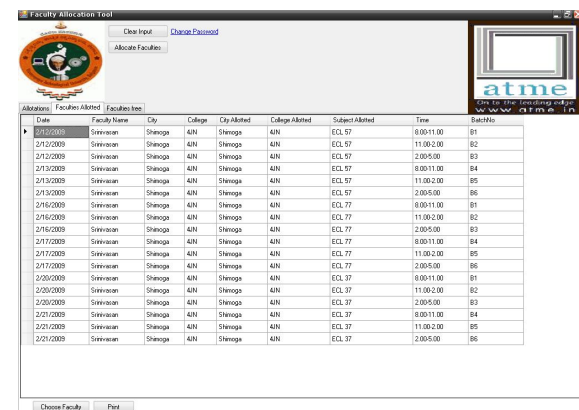


Figure 7: Allocations for a selected faculty

The figure above shows duty allotted for faculty by name Sri.Srinivasan. A facility for printing the individual allocations has also been provided.

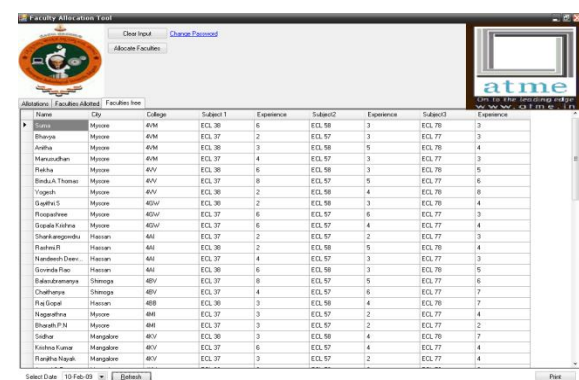


Figure 8: Faculties free on a particular day.

The above figure shows the examiners who are free on a particular day. This helps the chairman to make changes in allocations in case some examiners are not available on a particular day due to health/personal problems, provided they inform the chairman.

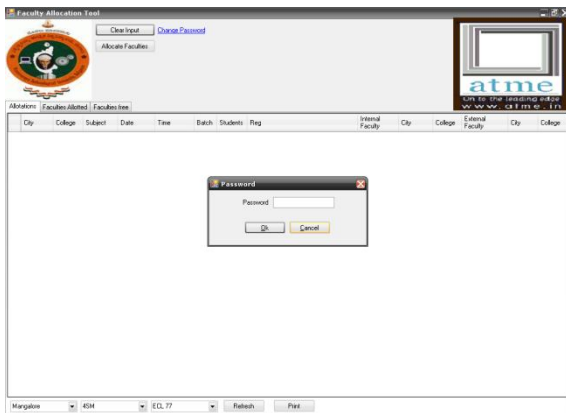


Figure 9: Clear Button

Clear button is provided to clear the database after the end of the exams and it is protected by a password. This button when clicked erases the whole database.

7 ADVANTAGES

1. Highly economical since this involves only one or two persons for database management and allocation can be done only by authenticated persons.
2. Less margin for Errors since I'm using faculty id (generated internally) for allocations and this it resolves ambiguities.
3. The allocation is bias free since it is done by software and allocation is transparent.
4. Allocation time less than 12 sec for a whole region and hence highly efficient.
5. Flexibility is high since the software can modified as per the needs.
6. Portability is enhanced since the tool is platform independent.
7. Secured/Authenticated since only authorized users can modify the databases.
8. Applicable to exams of any discipline, since the allocation is based on the subject code which is unique.

8 IMPLEMENTATION GUIDE

During the presentation, a fear was expressed regarding the enormous effort needed to update the database annually. In this connection the, following guidelines may be followed to minimize the effort:

1. All colleges can send their database according to a standard structure specified by VTU and digitally authenticated by the head of the institution on a CD. The database can then be created centrally by simply annexing all the CD's to a common file through software. Alternatively, if a network (either dial-up or dedicated) is available to VTU from various colleges, the data can be directly uploaded to the database by the respective colleges.
2. As a second option, the data can be obtained from the college on hard copy and a data entry operator can input the data into the database. At the rate of Rupee one per entry (approximate figure), the expenditure

will not be very high and the work can be completed within two weeks. The data can be verified by an authorized employee within a week more. Since the whole process needs to be done twice a year and the changes in the database within a year is not very high, the whole exercise would consume a total of around 15 days per semester and the expenditure would be less than 25,000-30,000 INR.

3. The process mentioned in Para 2 above can also be decentralized to reduce the time frames.

9 CONCLUSIONS

The technical tool designed is a user friendly tool to perform the job of allocation of faculties for coordinating practical examinations. The tool is versatile and can be adapted to a variety of situations. The tool also provides additional features like listing of free faculties on any particular day. This can be very useful information in case last minute changes are needed at the field level.

The tool performs the allocation job very quickly and without errors (less than a minute and error count is zero). It uses Visual Studio to print the result. The total cost of the software will be only marginally higher than the cost of the visual studio software.

The tool helps to save an enormous amount of money. Merely around 10% of the presently incurred expenditure would be needed to be spent if the tool is made use of.

In our work I have chosen the requirements of VTU as a case study and have obtained successful results.

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