Quarters allotment Project Summers 2015

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June 17, 2015
1. Introduction and Aim

2. How to apply in our portal?

3. An overview of our algorithm
   - Getting information from database
   - Calculating Inter-se-Seniority and Seniority Date.
   - Sorting and Printing the output.

4. Testing
   - Testing and Results obtained
   - Deviations and Problems with database
   - Some Doubts

5. Conclusion
Aim of our project

- To develop an interface that accepts applications from IIT Faculty for residential quarters.
- To also develop and implement a back-end algorithm which runs in the background and displays a sorted comparative statement according to the rules provided.
- To automate as much as possible so that there is reduced amount of errors, and transparency in the allotment process.
- To make an user friendly interface for faculty so that they can look at who else had also applied and fill preferences accordingly reducing workload.
Important Definitions

Seniority Date

Seniority date of an employee is the **first** date from which he or she became eligible for the type of accommodation in question and **has continued to remain eligible** till date.

Examples:
Important Definitions

Seniority Date

Seniority date of an employee is the **first** date from which he or she became eligible for the type of accommodation in question and *has continued to remain eligible* till date.

Examples:
An eligible faculty member left IIT Bombay on a sabbatical, or lien?
An eligible faculty member left IIT Bombay, joined Kanpur, and came back to IIT Bombay?

Note: The words 'seniority', 'seniority date', 'effective seniority' date is crucial in this project.

When multiple employees apply for the same quarter, the (effective) seniority date is used to resolve the allocation.
The allotment czars want to mitigate lateral shift, from say, B to B. It should be possible for a person with lower seniority to be considered ahead of another senior faculty member, should there be a recent shift into B by the latter.

This brings the concept of Fresh Allotment, and Inter-se Seniority.

**Fresh allotment**

If we define the order of quarters as A-type > B-type > C-type, then any allotment that goes from a lower ordered quarter to a higher ordered quarter is considered to be a Fresh allotment.
Important Definitions

Inter-se-years

The number of years of advantage that is given to an employee while deciding the seniority list. This is calculated as per rule 3.1.2.

Rule 3.1.2

An employee who is currently in a pay scale higher than the lowest pay scale which makes one eligible for the quarter in question will be given an advantage of one year seniority for every step above which his current pay scale is above the lowest pay scale that makes him eligible for the quarter. This will become clear later using an example. However, note that the concept of pay scale got changed with the Sixth Pay Commission and the notion of Grade Pay.

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Parsing the statement: This will become clear later using an example. However, note that the concept of pay scale got changed with the Sixth Pay Commission and the notion of Grade Pay.
**Important Definitions**

### Inter-se-Seniority

The inter-se-seniority date will be determined only in case of **Fresh** allotments and by pre-dating the date on which the employee was appointed to the higher scale by the number of inter-se-years defined above. In case the employee has been in more than one such higher scale, the inter se seniority date will be the earliest of the date so determined.

**Example**

An employee in pay-scale with grade pay of 9500 will get an advantage of 2 years if he applies to a B-type and an advantage of 4 years if he applies to an C-type.

**Effective Seniority**

Effective seniority is calculated as minimum of seniority date and inter-se-seniority.
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**Effective Seniority**

Effective seniority is calculated as minimum of seniority date and inter-se-seniority.
How to apply

A screen shot of our portal’s ’add my preferences’ page looks.

Quarters Allotment for IIT BOMBAY FACULTY

Adding your preferences

You can edit your preferences later and also delete them!

Select your preferences of quarters

1. None
2. None
3. None
4. None
5. None

CONFIRM

Go back to Status
How to apply

- Login using your LDAP ID and password.
How to apply

- Login using your LDAP ID and password.
- You can click on add my preferences button to add your preferences. You can add upto 5 preferences. The available quarters will be shown in the drop down box.
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- There is a home page to our portal which shows the status of all employees as who has applied to which quarters.
How to apply

- Login using your LDAP ID and password.
- You can click on add my preferences button to add your preferences. You can add upto 5 preferences. The available quarters will be shown in the drop down box.
- There is a home page to our portal which shows the status of all employees as who has applied to which quarters.
- You can edit your preferences using edit option and delete them using delete option.
How to apply

A screen shot of how our portal’s home page looks.

Quarters Allotment for IIT BOMBAY FACULTY

Applied candidates list

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ldap Id</th>
<th>Salcode</th>
<th>Name, Designation and Dept</th>
<th>Preference No:1</th>
<th>Preference No:2</th>
<th>Preference No:3</th>
<th>Preference No:4</th>
<th>Preference No:5</th>
<th>Present Qtr. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>animshk</td>
<td>I09056</td>
<td>EmployeeName_I09056 Assistant Professor Deptname_07</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>slodha</td>
<td>I10046</td>
<td>EmployeeName_I10046 Assistant Professor Deptname_07</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>SH - 3</td>
</tr>
<tr>
<td>3</td>
<td>panwar</td>
<td>I09085</td>
<td>EmployeeName_I09085 Assistant Professor Deptname_58</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>a_arjun</td>
<td>I10022</td>
<td>EmployeeName_I10022 Assistant Professor Deptname_07</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>shibal_sarker</td>
<td>I09093</td>
<td>EmployeeName_I09093 Assistant Professor Deptname_17</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>shalabhg</td>
<td>I09096</td>
<td>EmployeeName_I09096 Assistant Professor Deptname_07</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>D - 12</td>
</tr>
<tr>
<td>7</td>
<td>sujeet.singh</td>
<td>I09106</td>
<td>EmployeeName_I09106 Assistant Professor Deptname 17</td>
<td>C1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>SHA - 3</td>
</tr>
</tbody>
</table>
Outline

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Once employees attempt to login using their ldap credentials we go to the LDAP server to check for their validity.
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Only Faculty are able to login. We will also query for his salcode at the LDAP server.
Getting information from databases

- Once employees attempt to login using their LDAP credentials we go to the LDAP server to check for their validity.
- Only Faculty are able to login. We will also query for his salcode at the LDAP server.
- When an employee fills his preferences we get the basic information like his name, Dept, Designation and previous quarter (if any).
Once employees attempt to login using their ldap credentials we go to the LDAP server to check for their validity.

Only Faculty are able to login. We will also query for his salcode at the LDAP server.

When an employee fills his preferences we get the basic information like his name, Dept, Designation and previous quarter (if any).

The rest of the information about his entire biodata and status of his gradepay will be queried and calculated at the time of running the algorithm.
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Calculating Inter-se-Seniority and Seniority Date.

- Using the data obtained from the EIS-SERVICEBOOK table of asc database, seniority date will be calculated using the definition stated.

For the purpose of calculating inter-se-seniority dates in case of Fresh allotments, different rules will be followed accordingly whether he is in 6th pay commission or in other. Details of these could be found in the images in next pages.

The final seniority is calculated as minimum of all inter-se-seniorities and seniority date. The final list is prepared based on this seniority.
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Calculating Inter-se-Seniority and Seniority Date.

*Needs to be verified and modified for 4th and 5th pay commissions.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Pay Commission</th>
<th>GP/AGP</th>
<th>Entitlement</th>
<th>For A-type</th>
<th>For B-type</th>
<th>For C-type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>HAG</td>
<td>A</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>10500</td>
<td>A</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>10000</td>
<td>A</td>
<td>Nil</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>9500</td>
<td>B</td>
<td>NE</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>9000</td>
<td>B</td>
<td>NE</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>8900</td>
<td>B</td>
<td>NE</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>8700</td>
<td>B</td>
<td>NE</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>8000</td>
<td>B</td>
<td>NE</td>
<td>Nil</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>7600</td>
<td>B</td>
<td>NE</td>
<td>Nil</td>
<td>2</td>
</tr>
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<td>10</td>
<td>6</td>
<td>7000</td>
<td>C</td>
<td>NE</td>
<td>NE</td>
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<td>11</td>
<td>6</td>
<td>6600</td>
<td>C</td>
<td>NE</td>
<td>NE</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>6000</td>
<td>C</td>
<td>NE</td>
<td>NE</td>
<td>Nil</td>
</tr>
<tr>
<td>13</td>
<td>6</td>
<td>5400</td>
<td>C</td>
<td>NE</td>
<td>NE</td>
<td>Nil</td>
</tr>
<tr>
<td>14</td>
<td>4 or 5</td>
<td>Professor</td>
<td>A</td>
<td>Nil</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>4 or 5</td>
<td>Associate Professor</td>
<td>B</td>
<td>NE</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>4 or 5</td>
<td>Assistant Professor</td>
<td>B</td>
<td>NE</td>
<td>Nil</td>
<td>1</td>
</tr>
</tbody>
</table>
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5. Conclusion
The allocation list is then sorted for each type quarters separately on the seniority calculated earlier.

- In case two employees have the same seniority, then the seniority date will be used for comparison given that the employee with lower seniority date is applying for a fresh allotment.
- In case two employees have the same seniority date also then employee with longer service will precede.
- In case two employees have the same service also then employee with larger grade pay on the last date of circular will precede. In case this is also same birth date will be considered.

After running the algorithm two lists will be printed one is for open competition, and another is for SC-ST category.
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- After running the algorithm two lists will be printed one is for open competition, and another is for SC-ST category.
Here is a flow chart that shows on what basis two employees are compared while preparing seniority list.
### Output for C type quarters

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Salcode</th>
<th>Name, Designation and Dept</th>
<th>Dates of AP/ASP/P</th>
<th>Dates of Inter-seniority</th>
<th>Date of Eligibility</th>
<th>Preferences</th>
<th>Present Qtr. No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I09026</td>
<td>EmployeeName_I09026 Assistant Professor Deptname_12</td>
<td>2009-02-06 (8000 AGP) 2012-02-06 (9000 AGP) 2009-02-06 (ASP)</td>
<td>2007-02-06</td>
<td>2007-02-06</td>
<td>C1</td>
<td>SHA-23</td>
<td>Fresh</td>
</tr>
<tr>
<td>3</td>
<td>I10046</td>
<td>EmployeeName_I10046 Assistant Professor Deptname_07</td>
<td>2010-07-12 (8000 AGP) 2010-07-12 (9000 AGP) 2010-07-12 (ASP)</td>
<td>2008-07-12</td>
<td>2007-07-12</td>
<td>C1</td>
<td>SH-3</td>
<td>Fresh</td>
</tr>
<tr>
<td>4</td>
<td>I09085</td>
<td>EmployeeName_I09085 Assistant Professor</td>
<td>2009-07-20 (8000 AGP) 2012-07-20 (9000 AGP)</td>
<td>2007-07-20</td>
<td>2007-07-20</td>
<td>C1</td>
<td>-</td>
<td>Fresh</td>
</tr>
</tbody>
</table>
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We would like to thank Prof. S. V. Kulkarni, Dean IPS, IIT BOMBAY for kindly providing us the inputs and outputs of previous years’ data.
Testing and Results obtained

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We tested for 3 A-type quarters, 3 B-type quarters and 3 C-type quarters including several 'bulk allotment' multi-storied 'difficult' cases.
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Here are the deviations and some errors that we observed with the database...
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There is a column called GROUPCODE in servicebook table which contains information which says whether he is a faculty or not. But, it was not filled for some employees during some period. Eg:- SALCODE 101034.
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<table>
<thead>
<tr>
<th>SALCODE</th>
<th>GROUPCODE</th>
<th>FROM_DT</th>
<th>TO_DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>101034</td>
<td></td>
<td>1999-03-01 00:00:00.0</td>
<td>2000-02-29 00:00:00.0</td>
</tr>
<tr>
<td>101034</td>
<td></td>
<td>2000-03-01 00:00:00.0</td>
<td>2001-03-01 00:00:00.0</td>
</tr>
<tr>
<td>101034</td>
<td></td>
<td>2001-03-01 00:00:00.0</td>
<td>2002-03-01 00:00:00.0</td>
</tr>
<tr>
<td>101034</td>
<td></td>
<td>2002-03-01 00:00:00.0</td>
<td>2003-03-01 00:00:00.0</td>
</tr>
<tr>
<td>101034</td>
<td>AFA</td>
<td>2003-03-01 00:00:00.0</td>
<td>2004-02-29 00:00:00.0</td>
</tr>
<tr>
<td>101034</td>
<td>AFA</td>
<td>2004-03-01 00:00:00.0</td>
<td></td>
</tr>
<tr>
<td>101034</td>
<td>AFA</td>
<td>2005-03-01 00:00:00.0</td>
<td>2006-02-28 00:00:00.0</td>
</tr>
</tbody>
</table>
There is a column called GRADEPAY in servicebook table which contains information about employee’s grade pay. But, it was left as null for some employees and was filled as a zero in some cases during some period. Eg:- SALCODE I01061.
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<table>
<thead>
<tr>
<th>SALCODE</th>
<th>POSTCODE</th>
<th>GROUPCODE</th>
<th>FROM_DT</th>
<th>TO_DATE</th>
<th>GRADEPAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>I01061</td>
<td>00106</td>
<td>AFA</td>
<td>2009-02-27 00:00:00</td>
<td>2009-02-28 00:00:00</td>
<td>0</td>
</tr>
<tr>
<td>I01061</td>
<td>00106</td>
<td>AFA</td>
<td>2009-02-27 00:00:00</td>
<td>2009-06-30 00:00:00</td>
<td>10500</td>
</tr>
<tr>
<td>I01061</td>
<td>00106</td>
<td>AFA</td>
<td>2009-02-27 00:00:00</td>
<td>2009-06-30 00:00:00</td>
<td>10500</td>
</tr>
<tr>
<td>I01061</td>
<td>00005</td>
<td>AFA</td>
<td>2009-03-01 00:00:00</td>
<td>2010-02-28 00:00:00</td>
<td>10500</td>
</tr>
<tr>
<td>I01061</td>
<td>00106</td>
<td>AFA</td>
<td>2009-03-01 00:00:00</td>
<td>2010-02-28 00:00:00</td>
<td>0</td>
</tr>
<tr>
<td>I01061</td>
<td>00106</td>
<td>AFA</td>
<td>2009-07-01 00:00:00</td>
<td>2010-06-30 00:00:00</td>
<td>10500</td>
</tr>
</tbody>
</table>
There is a table RR-OCCUPANCY-MASTER which contains information about employee’s present quarter number and building. But, in the output that was provided to us the present quarter’s information is not matching to the info that we are getting by the database.
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Here are some counter examples...
In case of employee with salcode as I12008, his present quarter is given to be Suncity in the actual output but it turns out to be H1A-1 according to database.
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Database:

<table>
<thead>
<tr>
<th>BLDG_TYPE</th>
<th>QTR_NO</th>
<th>OCCUPANT_ID</th>
<th>OCCUPY_DATE</th>
<th>VALIDITY_DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1A</td>
<td>1</td>
<td>I12008</td>
<td>2012-03-06 00:00:00.00</td>
<td>2014-01-10 00:00:00.0</td>
</tr>
</tbody>
</table>

Output given to us:

| 9 | I12008 | Prof. Sumit Saxena, Asst. Prof., M.E.M.S sumit.saxena | 12-08-13 (8000 AGP) | -- -- | 12-08-13 | Suncity | Fresh |
Outline

1. Introduction and Aim

2. How to apply in our portal?

3. An overview of our algorithm
   - Getting information from database
   - Calculating Inter-se-Seniority and Seniority Date.
   - Sorting and Printing the output.

4. Testing
   - Testing and Results obtained
   - Deviations and Problems with database
   - Some Doubts

5. Conclusion
Contractual Employees

- There are some cases where an employee who is an assistant professor on contractual basis is considered to be eligible for a B-type quarters even though he is having a grade pay of 7000(<7600). But, while calculating seniority date, this is not considered. This is also because of incorrect data in database. Example:
Contractual Employees

- There are some cases where an employee who is an assistant professor on contractual basis is considered to be eligible for a B-type quarters even though he is having a grade pay of 7000(<7600). But, while calculating seniority date, this is not considered. This is also because of incorrect data in database. Example:

- Database:

<table>
<thead>
<tr>
<th>SALCODE</th>
<th>GROUPCODE</th>
<th>FROM_DT</th>
<th>TO_DATE</th>
<th>GRADEPAY</th>
<th>POSTCODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I12080</td>
<td>AFA</td>
<td>2012-07-23 00:00:00.0</td>
<td>2013-06-30 00:00:00.0</td>
<td>7000</td>
<td>00664</td>
</tr>
<tr>
<td>I12080</td>
<td>AFA</td>
<td>2013-07-01 00:00:00.0</td>
<td>2014-06-30 00:00:00.0</td>
<td>7000</td>
<td>00664</td>
</tr>
<tr>
<td>I12080</td>
<td>AFA</td>
<td>2014-06-27 00:00:00.0</td>
<td>2015-06-30 00:00:00.0</td>
<td>8000</td>
<td>00004</td>
</tr>
<tr>
<td>I12080</td>
<td>AFA</td>
<td>2014-07-01 00:00:00.0</td>
<td>2015-06-30 00:00:00.0</td>
<td>7000</td>
<td>00664</td>
</tr>
</tbody>
</table>

- Output given to us:

| 10 | I12080 | Prof. Rama Pal, Asst. Prof., H.S. Sramal | 27-02-14 | -- | 27-02-14 | -- | Fresh |

- We want to know the exact rule for such cases since we could not conclude anything concrete from test case given to us.
Conclusions

- Developed a complete interface that takes applications, runs algorithm and gives the output i.e; seniority list after the deadline.

We would like to thank Prof. Sharat Chandran for guiding us and clarifying our doubts in time.

We would also like to thank Dharmendra, ASC, who gave us a testable database so that we can test our algorithm by querying the given database.

We are looking forward to extend this to non-faculty (staff).

Quarters allotment Project Summers 2015

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IIT BOMBAY FACULTY QUARTER ALLOTMENT

June 17, 2015
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References

(2) http://www1.iitb.ac.in/deanpl/estoff/rulesammendments/accrules(amended).pdf
(3) http://www1.iitb.ac.in/deanpl/estoff/rulesammendments/accrules.pdf
(4) http://www1.iitb.ac.in/deanpl/estoff/rulesammendments/aac_30jun.pdf
(5) http://www.w3schools.com/sql/
(6) https://www.railstutorial.org/