

Java Fundamentals

Week 02 – Assignment 01 – A university project, part 1

Project description

We assume that this project is created for a university. The system allows users (students, teachers and managers of the university) to access specific features of the application. To avoid spending time on designing relational databases, connections and using database tools, objects will be stored in memory, and a data seeder class is used for initializing all the test data.

Functional design

User login

1. The access to the application requires authentication.
2. By successful login, the system searches for the user. If the user is found, the system checks his/her access level and the available menu options appear.
3. There are three levels of access: Basic, Editor and Admin.
4. By default, students access level is basic, teachers access is editor and managers are admins.

Before being able to use the application, users have to login as shown below:

```
Enter username: emma
Enter password: emma12
```

Student (basic access level)

Students can access:

1. Display the list of the students
2. Display the list of the teachers

Students have the following three options:

```
S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice:
```

By entering the letter “S” the list of the students appear as shown below:

```
S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice: s
[
LIST OF STUDENTS

Id      FirstName  LastName  Birthdate  Age  Group
**      *          *          *          *   *
1       Emma      Smith     12/04/1997 23   IT-02-A
2       Jack      Brown     08/07/1993 27   IT-02-A
3       Michael   Garcia    11/01/1999 21   IT-02-A
4       Lisa      Jones     04/29/2000 20   IT-02-A
5       John      Miller    10/27/2001 19   IT-02-A
6       Linda     Martinez  01/17/2002 18   IT-02-A
7       Richard   Davis     09/22/1997 23   IT-02-A
8       Mark      Lopez     12/09/1996 24   IT-02-A
9       Debora    Hernandez  02/25/1995 25   IT-02-A
10      Rick      Moore     03/16/2000 20   IT-02-A

S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice:
```

By choosing the option “T” the list of the teachers appears, see the picture below!

```
S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice: t
[
LIST OF TEACHERS

Id      FirstName  LastName  Birthdate  Age
**      *          *          *          *
11      David      Taylor    06/15/1965 55
12      Sophy     Anderson  01/06/1987 33
13      James     Jordon    03/19/1956 64
14      Susan     Jackson   12/25/1978 42
15      Mary      Lee       09/04/1971 49

S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice:
```

By entering the letter “X” the program is terminated.

```
S. Display Students | T. Display Teachers | X. Exit |
Please, enter a choice: x
[
Leaving the program now ...
```

Teacher (editor access level)

Teachers can access all the functionalities that are available for the students with the following extra options.

- Add Students
- Display Reports (next assignment)
- Display Report Details (next assignment)
- Add and Modify Reports (next assignment)

Once the system recognizes an account as a teacher (editor access), the following features will be available:

```
Enter username: david
Enter password: david12
S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |
Please, enter a choice:
```

By entering the letter “A” teachers can add new students to the system.

```
Enter username: david
Enter password: david12
S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |
Please, enter a choice: a

ADD STUDENT

Choose a username: paul
Choose a password: paul12
Enter first name: Paul
Enter last name: Smith
Please enter date of birth in MM/DD/YYYY: 12/23/1998
Enter group: IT_02_B
The data was successfully added!

S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |
Please, enter a choice:
```

The new student now appears on the list of the students which can be accessed by entering the letter "S".

```
Enter group: IT_02_B
The data was successfully added!

S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |

Please, enter a choice: s

LIST OF STUDENTS

Id      FirstName  LastName  Birthdate  Age  Group
**      *          *          *          *    *
1       Emma      Smith     12/04/1997  23   IT-02-A
2       Jack      Brown     08/07/1993  27   IT-02-A
3       Michael   Garcia    11/01/1999  21   IT-02-A
4       Lisa       Jones     04/29/2000  20   IT-02-A
5       John       Miller    10/27/2001  19   IT-02-A
6       Linda      Martinez  01/17/2002  18   IT-02-A
7       Richard   Davis     09/22/1997  23   IT-02-A
8       Mark       Lopez     12/09/1996  24   IT-02-A
9       Debora     Hernandez  02/25/1995  25   IT-02-A
10      Rick       Moore     03/16/2000  20   IT-02-A
11      Paul       Smith     12/23/1998  22   IT_02_B

S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |

Please, enter a choice:
```

Java Fundamentals

Week 03 – Assignment 01 – A university project, part 2

For this assignment, the university project is extended with functionality related to student reports.

Functional design

When the user has editor access, entering the letter “R” shows the list of the reports of all the students.

A newly inserted student does not have grades therefore all the grades will be have to be set to zero, as shown below:

```
S. Display Students | T. Display Teachers | A. Add Students | R. Display Reports | X. Exit |
Please, enter a choice: r

STUDENT RESULTS

Id      FirstName  LastName  Birthdate  Age  Group   Java  CSharp  Python  PHP
**      *          *          *          *    *      *      *      *      *
1       Emma      Smith     12/04/1997 23   IT-02-A 54     50     66     54
2       Jack      Brown     08/07/1993 27   IT-02-A 72     68     43     95
3       Michael   Garcia    11/01/1999 21   IT-02-A 45     71     55     84
4       Lisa      Jones     04/29/2000 20   IT-02-A 98     64     81     72
5       John      Miller    10/27/2001 19   IT-02-A 100    94     99     93
6       Linda     Martinez  01/17/2002 18   IT-02-A 55     79     81     55
7       Richard   Davis     09/22/1997 23   IT-02-A 51     64     39     59
8       Mark      Lopez     12/09/1996 24   IT-02-A 78     98     89     99
9       Debora    Hernandez  02/25/1995 25   IT-02-A 59     55     67     99
10      Rick      Moore     03/16/2000 20   IT-02-A 96     87     55     82
11      Paul      Smith     12/23/1998 22   IT_02_B 0       0       0       0

Enter student id (Report Details) | Or 0 back to main menu:
```

By entering the id of a student in the 'Display reports' screen, the report details of the student appears, see the following picture!

```
Enter student id (Report Details) | Or 0 back to main menu: 11
Report of student Paul Smith
Student Id ..... 11
First Name ..... Paul
Last Name ..... Smith
Age ..... 22

      COURSES

Java ..... 0
CSharp ..... 0
Python ..... 0
PHP ..... 0

      RESULTS

Result ..... Not Passed
Retakes ..... 4

A. Add (Update) Report | R. Display Reports | B. Back to Main | X. Exit |
Please, enter a choice: Select a menu:
```

Enter the letter "A" to add or modify a selected report:

```
Report of student Paul Smith
Student Id ..... 11
First Name ..... Paul
Last Name ..... Smith
Age ..... 22

      COURSES

Java ..... 0
CSharp ..... 0
Python ..... 0
PHP ..... 0

      RESULTS

Result ..... Not Passed
Retakes ..... 4

A. Add (Update) Report | R. Display Reports | B. Back to Main | X. Exit |
Please, enter a choice: Select a menu: a
Current grade Java is: 0 Enter (new) grade: 69
Current grade CSharp is: 0 Enter (new) grade: 76
Current grade Python is: 0 Enter (new) grade: 55
Current grade PHP is: 0 Enter (new) grade: 88
Select a menu:
```

Enter the letter "R" to check the new grades!

The new grades of the student are now available on the list.

```

A. Add (Update) Report | R. Display Reports | B. Back to Main | X. Exit |

Please, enter a choice: Select a menu: a
Current grade Java is: 0 Enter (new) grade: 69
Current grade CSharp is: 0 Enter (new) grade: 76
Current grade Python is: 0 Enter (new) grade: 55
Current grade PHP is: 0 Enter (new) grade: 88
Select a menu: r
display Report .....

STUDENT RESULTS

Id      FirstName  LastName  Birthdate  Age  Group  Java  CSharp  Python  PHP
**      *          *          *          *   *     *     *       *     *
1       Emma      Smith     12/04/1997 23   IT-02-A 54    50      66      54
2       Jack      Brown     08/07/1993 27   IT-02-A 72    68      43      95
3       Michael   Garcia    11/01/1999 21   IT-02-A 45    71      55      84
4       Lisa      Jones     04/29/2000 20   IT-02-A 98    64      81      72
5       John      Miller    10/27/2001 19   IT-02-A 100   94      99      93
6       Linda     Martinez  01/17/2002 18   IT-02-A 55    79      81      55
7       Richard   Davis     09/22/1997 23   IT-02-A 51    64      39      59
8       Mark      Lopez     12/09/1996 24   IT-02-A 78    98      89      99
9       Debora    Hernandez 02/25/1995 25   IT-02-A 59    55      67      99
10      Rick      Moore     03/16/2000 20   IT-02-A 96    87      55      82
11      Paul      Smith     12/23/1998 22   IT_02_B 69    76      55      88

Enter student id (Report Details) | Or 0 back to main menu:

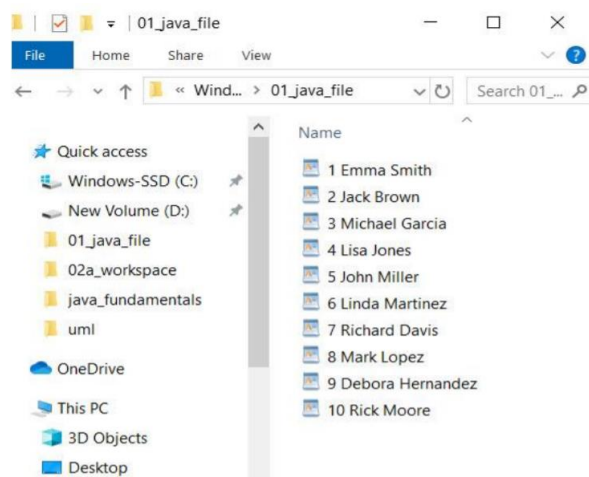
```

Managers (admin access level)

Managers by default can access all the functionalities that are available for the students and the teachers. Besides they can generate reports of all the students as shown below:

Save Reports

By entering the letter “V” managers are allowed to save all the reports in word or pdf files as shown below.



See an example of a generated report below:



Report of student Lisa Jones

Student Id	.....	4
First Name	.....	Lisa
Last Name	.....	Jones
Birthdate	.....	04/29/2000
Age	.....	20
Group	.....	IT-02-A

COURSES

Java	.....	98
CSharp	.....	64
Python	.....	81
PHP	.....	72

RESULT

Result	.....	Passed
Retakes	.....	0
