

DAM. UNIT 4. ACCESS USING COMPONENTS. PART 1. NON ASSESSABLE EXERCISES

DAM. Acceso a Datos (ADA) (a distancia en inglés)

Unit 4. ACCESS USING COMPONENTS

Part 1. Introducing JavaBeans. Non assessable exercises

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Aspects to bear in mind

Important

If you look for the solutions surfing the Internet or asking the oracle of ChatGPT you will be fooling yourself. Keep in mind that **ChatGPT is not infallible or all-powerful.**

It is a great tool to speed up your work once you have mastered a subject, but using it as a shortcut when acquiring basic skills and knowledge seriously undermines your learning. If you use it to get solutions or advice on your own, check the proposed solutions carefully as well. Try to solve the activities using the resources we have seen and the extended documentation you will find in the "Virtual Classroom".

Tips for programming

We advice to follow the next coding standards:

- One instruction per line.
- Add comments to make your code clearer and more readable.
- Use the Hungarian notation to recognise the type of variables at first sight.
- If necessary, we strongly recommend using buffer-based solutions.
- Remember that there are several ways to implement a solution, so choose the one you like best.

1. Console mode. Managing a library with JavaBeans

Activity (non assessable)

Create **FOUR JavaBeans**, build them in a JAR file, import them in a new class file and let them interact following these instructions.

1.1. JavaBeans objects

Create the following JavaBeans:

- **BEAN 1: BookBean (SOURCE)**

- Represents a book in a library, available for the students as a loan.
 - private int iBookid;
 - private String stName;
 - private boolean bAvailableForLoan = true;
 - private boolean bRequired = false;

- **BEAN 2: FineBean. (LISTENER)**

- Represents a fine/penalty in a library, to prevent students to keep the books more than the allowed period (15 days).
 - public static final int BANNEDDAYS = 5;
 - public static final int LOANPERIOD = 15;
 - private int iFinenumber;
 - private LoanBean objLoan;

- **BEAN 3: StudentBean (LISTENER)**

- Represents a student borrowing/returning a book.
 - private int iStudentnumber;
 - private String stName;
 - private BookBean objBook;

- **BEAN 4: LoanBean (LISTENER)**

- Represents a loan of a book.
 - private int iLoannumber;
 - private BookBean objBook;
 - private StudentBean objStudent;
 - private Date dtStartLoanDate;

1.2. JavaBeans events

The application should fire events when these situations happen:

a) Changing objBook.bRequired to TRUE:

- StudentBean should say:
 - HI, STUDENTBEAN SPEAKING!
 - Book: "" + objBook.getstName() + "" claimed"

b) Changing objBook.bAvailableForLoan to TRUE:

- StudentBean should say:
 - HI, STUDENTBEAN SPEAKING!
 - Book: "" + objBook.getstName() + "" returned
- LoanBean should say:
 - HI, LOANBEAN SPEAKING!
 - Updating the loan actual return date...
- FineBean should say:
 - HI, FINEBEAN SPEAKING!
 - Checking possible fines...
 - if (blsDelayed) {
 - [!!] Setting 5 banned days to " + objLoan.getobjStudentName() + "... "
 - } else {
 - Returned on time. Thanks, " + objLoan.getobjStudentName() + "!"

c) Changing objBook.bAvailableForLoan to FALSE:

- StudentBean should say:
 - HI, STUDENTBEAN SPEAKING!
 - Book: "" + objBook.getstName() + "" borrowed
- LoanBean should say:

- HI, LOANBEAN SPEAKING!
- Creating the loan and resetting the student's banned days...

To check how the components interact, we suggest the piece of code you can find below.

```

/*
 * Creating the objects
 */
//Object source
BookBean objBook = new BookBean(1, "The Lord of the Rings");
//Objects listeners
StudentBean objStudent = new StudentBean(1, "Gandalf the White");
FineBean objFine = new FineBean();
LoanBean objLoan = new LoanBean();

/*
 * Assign the object source to the listener
 * Start the listener object
 */
objStudent.setobjBook(objBook);
objBook.addPropertyChangeListener(objStudent);

SimpleDateFormat dtFormat = new SimpleDateFormat("dd/MM/yyyy");
objLoan.setdtStartLoanDate(dtFormat.parse("01/01/2024")); //starting loan date
objLoan.setobjBook(objBook);
objLoan.setobjStudent(objStudent);
objBook.addPropertyChangeListener(objLoan);

objFine.setobjLoan(objLoan);
objBook.addPropertyChangeListener(objFine);

/*
 * Firing events
 */
//System.out.println("***** book.setAvailableForLoan(false):");
objBook.setbAvailableForLoan(false);
//System.out.println("***** book.book.setRequired(true):");
objBook.setbRequired(true);
//System.out.println("***** book.setAvailableForLoan(true):");
objBook.setbAvailableForLoan(true);

```



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