

TopDev Association

Subject of the programming contest

TOPDEV07-EPRE-0002

Ref.:

TOPDEV07-EPRE-0002-01 - 06/02/2007

Subject of the Contest

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I. THE PROCESS OF THE CONTEST

I.1. Schedules

The beginning of the competition: Friday March 23th 2007, 14:00:00 (GMT+1, time of Paris, Copenhagen, Madrid)

Deadline for submission: Sunday March 25th 2007, 23:59:59 (GMT+1, time of Paris, Copenhagen, Madrid)

All deliverables described further on will have to be set on the server before this deadline.
The delivery order document must be sent by email to: info@topdevone.com

Once this delivery order is received, the access to your delivered files is locked.

I.2. Conditions of use of the servers

Disk space and CPU resources on the TopDev Server provided to you, are meant to be used only for simple tests. It has a limited memory and treatment capacity. Each candidate using too much server resource could be excluded from the TopDev Contest.

Even if files delivered in your provided disk space happened to be technically still accessible after the submission deadline, their modification after the deadline is forbidden, and the infringement of this rule will lead to exclusion from the TopDev Contest.

I.3. To be read !!!

I.3.1. Documents describing the contest subject

This subject of the contest is composed of:

- The present document gathering:
 - general specifications
 - detailed specifications
 - a description of the requested deliverables
- One text file making up a test set
- A zipped directory containing some screenshots describing the look of the application to develop.

I.3.2. Deliverables

Deliverables are :

- the software application, installed and directly usable on the provided disk space (except for J2EE developments which need specific deployment)
- Source code of the software application (uncompiled source code) and the process describing its installation (if compilation is necessary)
- Compiled source code of the software application and the process describing its installation.
- the database structure dump (including, if necessary, the insert of entries in the database) in a .SQL format
- a documentation (see below)
- a delivery order (see below)

Your deliverables must be in a folder named « contest » on your private area (you must explain where this folder is set in your delivery order). It contains 2 sub folders:

- « source » : compiled and uncompiled source code
- « doc » : .SQL, documentation, delivery order

What is more, in the « contest » folder, put a « your_login.zip » which contains both sub folders "source" and "doc".

I.3.3. Description of documentation to be delivered

The purpose of the documentation can be described as follow:

It must contain all pieces of information necessary for a quick understanding of the realised development.

It must enable the jury to understand your work as fast as possible.

This part of the contest tests your capacity to communicate, your ability to transfer your knowledge, and the maintainability of your work.

This document should be in a PDF or MS Word or OpenOffice or html format.

Some examples :

- to describe the global architecture of the application
- to describe the role of a complex method, with the basic structure of its algorithm. NB: The purpose is not to provide description of very simple items, such as, e.g. get_id() methods.
- to list the session variables
- to describe the content of the cookies
- to specify what and where are the global parameters of the application
- ...

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Furthermore, following information will be necessary :

- an explanation of how to deploy the application (especially if particular data needs to be created)
- a detailed description of the database (especially if temporary tables exist, or if the use of some fields or tables needs to be explained)
- a general procedure explaining how to exchange data towards external software applications (as described at the end of the present document)

It is not necessary to write a voluminous documentation, around 5 pages should be largely enough.

PLEASE TAKE CARE TO USE CORRECT ENGLISH OR FRENCH !!!

I.3.4. Delivery order

The delivery order will be sent per e-mail to the following address: info@topdevone.com

The e-mail's subject will be : Login_amen - Login_topdevon - "Delivery order"

The e-mail will contain the delivery order (directly in the e-mail's body).

It will describe all functionality present or missing in your application software.

II. TECHNICAL SPECIFICATIONS

II.1. Common technical specifications

II.1.1. Database

One unique database will be available for the contest (MySQL 4.1.2).

User names, passwords, database name,... should be defined in a parameter file.

Please define carefully the field or table names. All table names should begin with the same common prefix (being equal to your login, for example)

Indexes, temporary tables or other particularities... must be explained in your documentation.

II.1.2. Browsers

The created web site has to be designed for use with both Microsoft Internet Explorer (> 6.0.x) and Mozilla FireFox (> 1.0.7).

Cookies and javascript can be used.

ActiveX or Applets can be used as well.

II.1.3. Others...

Your application must be running regardless of the path of its main directory: even if the main directory is not the top directory, all links will have to keep working.

The file "index.html" should be (or should be able to redirect the user to) the main home page of your application.

Your application should respect the general "look and feel" defined in the Graphic Charter. But you can also define your personal style to improve the look of your application.

Please take care to clearly structure your source files and directories.

The use of external tools is authorized, but they will have imperatively to support the GPL license. Their installation will have to be possible without requiring a "root" account. If an external software application has to be used, it will of course have to be properly documented: each tool used will have to be mentioned in the documentation, with URL where the application can be downloaded and where documentation can be found.

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IMPORTANT :

One of the main points of the TopDev Contest is the easiness with which the Jury will manage to understand your code.

This will be decisive for the designation of the winners of TopDev 2007.

II.2. Language-specific Technical Specifications

II.2.1. Python

Python coding will lean on an Apache server in mod_python.

Versions are :

- apache : 2.0.54
- mod_python : 3.1.4

You have to install your application on the topdev-amen-1.net (62.193.234.125) in your private directory.

The http access is : http://your_login.topdev-amen-1.net

II.2.2. PHP

PHP 4 and PHP 5 are authorised for TopDev 2007.

The use of template managers and other GPL-licensed tools is authorized, but they will then have to be exclusively made of .php files.

PHP4 version is : 4.3.11

Files will have to have the extension .php4 or .php

You have to install your application on the topdev-amen-2.net (62.193.234.130) in your private directory.

The http access is : http://your_login.topdev-amen-2.net

PHP5 version is : 5.0.4

Files will have to have the extension .php5 or php

You have to install your application on the topdev-amen-1.net (62.193.234.125) in your private directory.

The http access is : http://your_login.topdev-amen-1.net

II.2.3. .Net

.Net environment is 1.1.4322.0

Authorised languages are:

- c#
- VB.Net

You have to install your application on the topdev-amen-2.net (62.193.234.130) in your private directory.

The http access is : http://your_login.topdev-amen-2.net

II.2.4. Java

The presented problem is simple, and may be handled using only JSP and Servlet, hosted on a Tomcat server.

The delivered application software will have to be set up directly on a Tomcat server. The system will have to work in both Windows and Linux environments.

with TomCat version 5.0.19.

JDK : 1.5

Delivery will be made through .war file, to be put in the "cgi-bin" directory. The name of the application will be your login given to you for the test environment.

The http access is : <http://topdev-amen-2.net:8080/yourlogin>

This TomCat server restarts every hour. (from hh:00 to hh:02)

If the proposed solution uses J2EE, Struts or another framework, the documentation will have to be very accurate (installation, deployment, model...). You must explain in detail how to set up your environment (in your documentation). This set up must be described for a Windows 2003 server, and Tomcat 5.5. This set up must last less than 20 minutes.

In this case, the documentation should contain more than 5 pages.

III. SUBJECT OF THE CODING EXAMINATION

III.1. General functional background

The application software will be implemented by a big company selling a lot of different products. The goal of the application is to manage the name of people who is allowed to sign identified documents (called "signature delegations"), according to their authority and their skill. Documents are identified by a type of document, classified in a category of type. A document concerns a specific product (or a product range).

The target is to set up :

- An interface to manage a directory
- An interface to manage products (called "Product") and products ranges (called "Range")
- An interface to manage types of documents (called "Type of Doc") and Categories of type of document (called "Category")
- A system to manage the matching between people and their signature delegations upon a Type of Doc (for a Product or a Range).
- A search engine to lookup signature delegations

A Product belongs to one and only one Range. A Range is composed of zero or several Products.

example:

Range1: PC

Products: laptop 3GHz, PC Familial 4GHz, ...

Range2: Cellular

Products: S4300, S4310, W2500,...

A Type of Doc belongs to one and only one Category. A Category is composed of zero or several Types of Doc.

example:

Category1: Procurement

Type of Doc: RFQ, delivery Order, Purchasing order...

Category2: Technical Document

Type of Doc: test report, conformity registration...

When will be used this application ?

When an employee of this company will write a document, he first will use a template of document. This template stores the name of the "Type of Doc" and the "Category". What is more, this document deals with a specific "Product" or sometimes a specific "Range" of products.

Thanks to this application developed for TopDev 2007, this user will easily find the name of the person (or of people) who are allowed to sign his document.

This application will be used on the company intranet, having in this case a rather infrequent use in update (about 2 simultaneous users), but having more than 100 reader people using the application at the same time

NB : Keep this in mind, in order to limit the memory usage.

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There are 2 user profiles:

- Data managers : they create and update any document of this application. (Data managers are called 'Managers' in this document)
- Any user of the Intranet is a Reader: they can search and read data stored in the database, without modify or create any. (They are called 'Readers' in this document)

In order to avoid developing an authentication module, the role of a user will be chosen in the home page, by a drop down menu, or buttons. This choice can be modified each time a user will access to this Home Page.

III.2. Detailed Specifications

III.2.1. Home Page

The Home page is the first page of your site, and contains the links giving access to all services.
The look and feel of this page is free, but must be ergonomic and easily modified

This page must include the module to choose the profile of the user (Manager or Reader).

This Home Page is composed of links to access to data managing modules (only for Managers):

- Manage the directory
- Manage Ranges
- Manage Products
- Manage Categories
- Manage Types of Doc
- Manage Delegation Signatures

This Home Page includes a link to the Search Engine of Delegation Signatures.

This Home Page includes a link to open the full list of Delegation Signatures.

If you want, you can develop two pages for this Home Page:

- one for the choice of the profile
- another to access to the associate services

III.2.2. Directory Management

From the Home Page, the link "Manage the directory" leads to a page displaying a list of all created people (order by the alphabetical order of the name), with a button to create new person.

A person is identified by his name, first name, entity (siglum) and his network login.

Field Name	type		example	mandatory
Last Name	string <50 characters		MARTINEZ	Yes
First Name	string <50 characters		John	Yes
Login	string <10 characters		P025640	Yes
Entity	string <7 characters		DSIN	Yes

To simplify the contest, deletions and updates of people will not be developed.

(this part of the contest is not an essential point. You should avoid to spend too much time on it)

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III.2.3. Ranges Management

From the Home Page, this link "Manage Ranges" leads to a page displaying a list of all defined Ranges inside a table (in alphabetical order), with a button to create new Range, and offering possibility to modify each Range.

A 'Range' is only a single string, with less than 100 characters (for example : "Laptops", "Printers", ...). The number of Ranges is not limited, but, in normal use, it will not exceed 20.

(this part of the contest is not an essential point. You should avoid to spend too much time on it)

Option Level 2 (not mandatory, but adding points in the contest):

From this page, from each Range, the list of Products linked to the Range can be displayed.

A deletion button is also available (if products are linked to it, all those linked products must be deleted too, after a confirmation by the user. If a linked product is used in a delegation signature, the deletion wont be allowed).

End of Option Level 2.

III.2.4. Products Management

From the Home Page, this link "Manage Products" leads to a page displaying a list of all defined Products inside a table (in alphabetical order), with a button to create new Product, and offering possibility to modify each Product.

A 'Product' is only a single string, with less than 100 characters (for example : "Espon 58454", "Sony 2650", ...) belonging to a Range.

The number of Products is not limited, but, in normal use, it will not exceed 200 (20 products a range).

(this part of the contest is not an essential point. You should avoid to spend too much time on it)

Option Level 1 (not mandatory, but adding points in the contest):

From this page, from each Product, a deletion button is available (if Products are linked to delegation cards, this deletion will not be allowed).

End of Option Level 1.

III.2.5. Categories/Types of Doc Management

This management is exactly the same as for the couple Range/Product (with only about 10 categories of less than 10 types of doc by category)

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III.2.6. Access to the full list of signatories and delegations

From the Home Page, this link "full list of Delegation Signatures" leads to a page displaying a list of all defined Delegation Signatures, in alphabetical order of the name of Signatories (even if a signatory has several delegations, his name must be displayed once).

Option Level 1:

A pagination system will be achieved in order to display signatories 20 by 20. (this value of "20" should be modified easily).

End of Option Level 1.

Under each name of signatory, a table listing "delegations" should be displayed. A click on a line of this table should open the "delegation card" linked ([see details of this card hereafter](#)).

The columns of this table will be: Category, Types of Doc, Range, Products, Level.

Option Level 1:

The display or the hide of a table of delegations should be alternate, each time the user will click on the line of the Signatory name.

End of Option Level 1.

Option Level 2:

The display of a table of delegations should be exhaustive. It means that every association "Type of Doc" - "Product" must appear. For example: if a delegation card is created for 2 Types of Doc and 3 Products, 6 lines must appear.

Besides, if the delegation is made at a "Range" level (without specifying a Product), all products must be displayed in this table. (and reciprocally for a Category)

End of Option Level 2.

At the bottom of this list, a button will enable to create a new Delegation card.

A click on a line of this table should open the "delegation card" associated (directly in modification for Managers)

III.2.7. Creation of a Delegation Card

A button at the bottom of the previous list enables to create a new Delegation card. Only Manager can see this button.

This action is also available inside a Delegation Card. In that case, the new created card will be automatically linked to the same signatory.

If a mandatory field is not filled in when the user clicks on the Save Button, the creation will be canceled. An alert should prevent from this creation and inform of the reason.

Fields described hereafter must be displayed in the Card (obviously, you can add any other fields in your database) :

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Field Name	type	detail	example	mandatory
Last Name	string <50 characters	From a choice in the directory	DUBOIS	Yes
First Name	string <50 characters	From a choice in the directory	John	Yes
Entity	string <7 characters	From a choice in the directory	DSIN	Yes
Login	string <10 characters	From a choice in the directory	jdubois	Yes
Range	Unique Select	Selected from the Ranges list	Printer	Yes
Products	Multiple Select	Selected from the Products list belonging to the chosen Range	Print205, Print20-055-1	
Category	Unique Select	Selected from the Categories list	Procurement	Yes
Types de Doc	Multiple Select	Selected from the Types of Doc list belonging to the chosen Category	Order bulletin	
Level of Document	Unique Select	Chosen between: 1, 2 or X		Yes

The layout of the page must be simple. You are free to define the simplest and the more ergonomic way.

Please notice that some fields are mono-valued and others (Types of Doc and Products) are multi-valued.

The choice of the Signatory is made into the Directory. A button enables open a window where the directory opens (with a quick search engine). The user will pick the signatory in this list, and the first four fields will be automatically filled in.

One Signatory can have several delegation cards.

In a delegation card, the Product field cannot be filled in before the Range is selected.

In a delegation card, the Type of Doc field cannot be filled in before the Category is selected.

If the Product field is left to blank (empty value), the delegation card means that the signatory is allowed to sign for every products of the selected Range.

If the Type of Doc field is left to blank (empty value), the delegation card means that the signatory is allowed to sign every Type of Doc of the selected Category.

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The Level of a document represents its importance for the company (level 1 is very important, and probably confidential).

In our tool, in a delegation card, this "Level" means that:

If a Signatory can sign documents of Level 1, he will be allowed to sign every documents, whatever their level (1, 2 or X).

If a Signatory can sign documents of Level 2, he will be allowed to sign documents with level 2 or X.

If a Signatory can sign documents of Level X, he will be allowed to sign only Level X documents.

III.2.8. Modify a Delegation Card

To modify a delegation card, the 'Manager' has first to retrieve the card (using the previous process). Then, after selection of the card to modify, the modification page looks like the creation page.

The user will be able to modify every field excepted the signatory. He cannot change the person concerned by this delegation, and what is more, he cannot update every data imported from the Directory.

The controls of mandatory fields are the same ones as during a creation.

A Save button and a Back button will be displayed in this page. (A "Add a new delegation" button will also be displayed, as seen in the previous process.)

III.2.9. Delete a Delegation Card

The deletion of a delegation card is allowed only for Managers.

A Delete button will be displayed in the Delegation Card (during the modification process).

III.2.10. Search Engine

Anyone connected to the tool will be allowed to launch this search engine. This module is one of the most important (and useful) of this tool.

The goal is to find easily who is allowed to sign a document, in the company.

Available fields of the search engine are describe hereafter. Some of them are mandatory to launch the request.

This module will use all business requirements described in the "Create a delegation" paragraph.

An empty field must not be used in requests launched here.

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Field Name	type	detail	mandatory
Range	Unique Select	Selected from the Ranges list	
Product	Unique Select	Selected from the full Products list (or restricted to Products belonging to the chosen Range, a Range is chosen)	
Category	Unique Select	Selected from the Categories list	Yes
Type de Doc	Unique Select	Selected from the restricted Types of Doc list belonging to the chosen Category	Yes
Level of Document	Unique Select	Chosen between: 1, 2 or X	

The results of this request will be a list of people allowed to sign the described document in the search engine. Those potential signatories will be listed with values of: Last name, First name, entity, login. A click on a line should open the delegation card validating this delegation of signature.

III.2.11. Exchange data with other tools

This application must be able to provide a list of signatories for external applications. Some documents management applications will need to find who is in charge of signing a document. For example, when someone creates a MS Word document, from an identified Template (i.e. a specific Type of Doc), a MS Word Macro could send a request to our database, in order to provide to the user, a list of authorized signatories for this document.

That is why, those external application should be allowed to use the search engine you developed.

This part of the TopDev contest is free ; you can propose whatever technical choice, process,... (XML, Web Services, API, Corba...)

Data to be exchanged are:

- received by our tool: the 5 fields of the search engine
- answer to the external requester: name, first name, login, entity

This part of the TopDev contest is free ; you can propose whatever technical choice, process,... (XML, Web Services, RSS,...email...)

You can only explain your solution without coding it.

A particular part of your documentation must explain your answer.

--- End of this Subject of the TopDev Contest ---