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An Oriented Object Application

This article presents the description of an Oriented Object Application functional inside an Expert System of an industrial Company. This application manages the company's employees, while working in various projects and program packages. With this application, the company can generate productivity reports for different departments, thus monitoring their efficiency and profitability.

Keywords: *Oriented Object Application, C++ language, web programs, Expert System, industrial Company.*

1. Introduction

Object Oriented Programming is a software method in which programs are organized as cooperative collections of objects, each representing an instance of a class, and classes are members of a hierarchy of classes, correlated with the inheritance relations.

A real object is characterized by the structure, properties and functionality.

In Object Oriented Programming (OOP), object consists of a data structure with processing methods and acting on data. The object encapsulates the data according to the fundamental principle of encapsulation, and access to data is only the set of methods associated with the object. Implementation is transparent to the user. If you change the data structure states can appear modification methods. If kept specification methods will not be affected object's use.

C++ is one of the most used object-oriented programming languages, compilers, libraries and development tools C++ programs are available for personal computers, and for the most developed systems and workstations.

Generally, objects are real and consists the problem.

We can say, that C++ programs written by OOP techniques are easier to understand, debug and developed than procedural programs.

2. Description of the application

TiMaLog (Time Management Logger) is a working time management application for employee of a industrial company, developed an expert system ServiceXpert GmbH. This application was developed in a web ASP.NET, C++ and Javascript programming languages, being used, and as the system to manage database, SQL Server, developed by Microsoft.

TiMaLog is a web application by the company register, monitor and evaluate the various projects and hours worked per work package.

Working hours (planned and actually worked) employees shall be recorded according to the projects and work packages that are assigned to them. With the help of this application, the company can generate productivity reports for different departments, thus monitoring their efficiency and profitability.

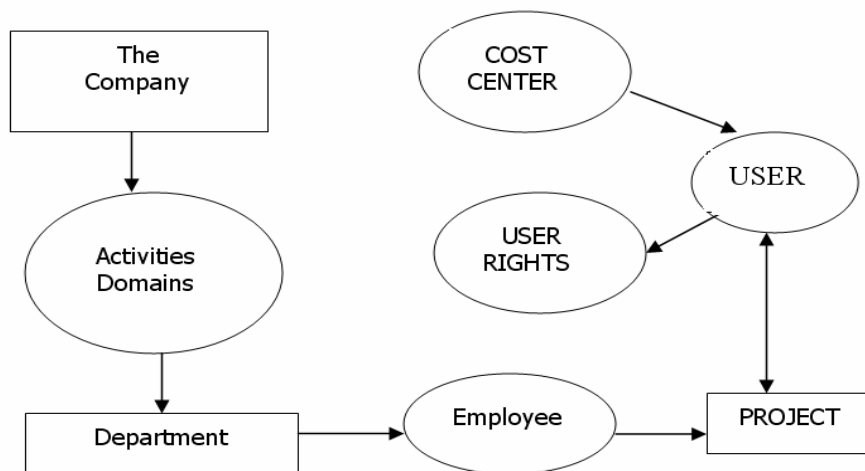


Figure 1. The Application Infrastructure

The modified structure of the application, a cost center is not directly assigned to a specific department, they now belong to all departments. The Rights of access to a department head, which formerly was restricted to the department or cost centers will be expanded in the new situation at all cost centers.

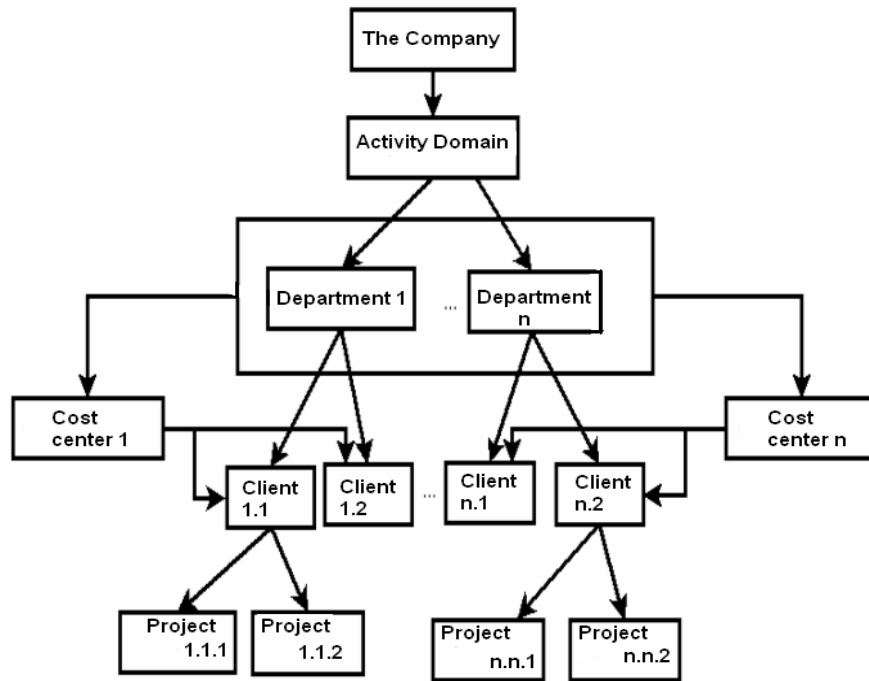


Figure 2. Activities planning

3. Implementation of the application

TiMaLog application contains 4 mains menus: Employee menu, Project Leader menu, Department Leader menu, and the last one, Controller department.



Figure 3. Mains menus in the TiMaLog application

3.1. Employee menu

After logging the user account and password can access the page "Input time" where they are displayed only projects that is allocated. The employee can see the entire structure of the project, which is displayed with all its work packages and tasks of each sub-package.

	20/06/	21/06/	22/06/	23/06/	24/06/	25/06/	26/06/	CUR [h]	PLAN [h]
	MO	TU	WE	TH	FR	SA	SU		
Hours of work [h]	8.00	8.25	7.50	8.00	8.00			40.35	40.35
Booked work time [h]	8.00	8.25	7.50	8.00	8.00	0.00	0.00	40.35	40.35
123456789 OrderingSystem	5.00	8.25	7.50	5.00	0.00	0.00	0.00	92.26	10.00
1 Web									
1.3 Entwicklungsphase 2									
1.3.0 Konsolidierung	5.00	8.25	7.50	5.00	0.00	0.00	0.00	92.26	10.00
Standardaufgabe	5.00	8.25	5.00	2.50				87.26	
Bug Fixing			2.50	2.50				5.00	
2345678910 Service-Applikation	3.00	0.00	0.00	3.00	0.00	0.00	0.00	19.60	13.00
1 Konsolidierung									
3 Open									
6 Integration und Test									
Produktiv-System									
2 A2 Integration und Test	3.00	0.00	0.00	3.00	0.00	0.00	0.00	19.60	13.00
Produktiv-System									
Testing	3.00			3.00				19.60	
Cost center Systementwicklung (5)	0.00	0.00	0.00	0.00	8.00	0.00	0.00	33.00	9.00
1 Arbeitsorganisation									
3 Urlaub									
3.1 Urlaub	0.00	0.00	0.00	0.00	8.00	0.00	0.00	16.00	0.00
Standardaufgabe					8.00			16.00	

Figure 4. Input time page

Values entering into the column "PLAN" is allocated to employee hours per project. If the amount of hours worked recorded by the user exceeds the number of hours allocated, it will be displayed in red in the "CUR [RENT]," the right project or work package concerned. If the difference between the two amounts is 0, then the hours worked will be marked with yellow, and if there were fewer hours than were allocated on the package, their sum will be green.

3.2. Project Leader menu

This menu is visible only to users who have right of access "Project leader". The most important options in this menu are the organization of projects and related work packages, called "Work Packages" and the generation of various reports, called "Reports", in the program.

3.3. Leader Department menu

Department Leader reports can be generated from this option only if the rights of use are the Leader. You can generate HTML page report type, format .Pdf or Excel tabular form.



Figure 5. Department Leader Reports

3.4. „Controller“ menu

This is the most complex of application menus. Controllers are users with more rights TiMaLog. They are the ones who actually manage the database application. With the "Controller" right, can we add, delete or modify database departments, clients, projects or users.

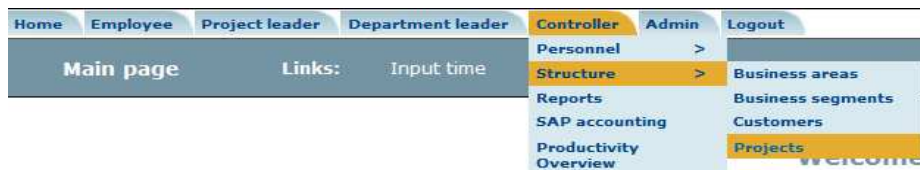


Figure 6. Controller Menu

4. Applications results

The results of object-oriented applications, allowing changes from menus:

- ❖ Creating a new class corresponding to the database table.
- ❖ Creating of a new method and C++ function to:
 - determine the current cost center of a collaborator
 - selection of collaborators working on a cost center.

5. Conclusions

Applications written in object oriented programming techniques have the advantage that they are easily updated, managed, modified and debugged.

After modifying the application monitoring work hours performed by company employees can be done on all projects and work packages simultaneously.

It replaced the old company structure and planning activities carried out so as to result in the employee's final report, all hours worked on each project.

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