CS 255 Model Application Short Paper

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**Process Model Application**

A process model is an important part of the planning of a project or program. The process model shows all the processes of a given program and displays them in a way that is easy to read and understand, even to non-programmers.

In this case, the program, meaning the DriverPass program, will have many different functionalities, which means it should have several process models in order to understand the scope of the entire project. For example, a process that will occurr in the DriverPass program is the ability for the program to automatically validate user info. A user who has already created an account with DriverPass will have account credentials saved in a database on the server that DriverPass owns. So, a process model in terms of words on this process would be as follows. The user will enter a username and password. If the account is found the program will grant access to the users account, if the credentials the user inputted are wrong in any way, then the program will deny access and prompt the user that the credentials were wrong and ask the user to try again or to reset the password.

Another example of a process in the DriverPass program is the ability for users to track how they are doing and the progress on practice quizzes and tests in order to prepare them for their driver's test. The process of a user taking a test would be as follows. The user starts the practice quiz or test. Every time the user answers and submits a question the system determines if the question is correct or not. At the end of the quiz or exam, the system will calculate the score based on the numbers of questions and questions answered correctly. The system will then display the score the user received to the user and also display if they passed or failed.

**Object Model Application**

An object model is also a very important part of planning or showing the necessary materials in a program and showing how objects and classes interact with one another and can contain more than one model per project. An object model is also relatively easy to read and understand to non-developers, at least when being compared to reading lines of code.

The DriverPass program's object model should include all classes, interfaces, and sub-packages, if there are any. Specifically, some classes that would be listed in the DriverPass object model would be: User, Customer, Admin, Instructor, etc. These classes will have class-specific functions and use Object-Oriented Programming resources. The benefit of OOP is contained in the four pillars, abstraction, polymorphism, inheritance, and encapsulation. These allow the programmer to create parent and child objects in the form of classes. For example, in our DirverPass scenario the User class is the parent class to Customer, Admin, and Instructor classes. This means that the child classes derive directly from the parent class, making it possible to inherit functions from parent class and the ability to use and modify the functions from different classes. In our case, the child classes Customer, Administrator, and Instructor will derive from the User class, taking all of the functions that are associated with it, which creates cleaner code that is not reused over multiple instances. Some functions that will be used in the User class are: setName, getName, and setID, and getID, etc. These functions are kept in the User class because its child classes also need these functions, so they will inherit them. Some functions that are more student specific would be: getGrade, enrollOnlineCourse, enrollInPersonCourse, etc. These functions ar specifically designed and should only be accessed for the customer, which is why these functions are only in this specific class.

**Process and Object Model Comparison**

The process model advantages are that it makes what a program and its functions easy to understand, and it also helps developers understand how a function is supposed to work prior to creating it. A disadvantage of the process model is it does not show how something programming-wise, as it does not include function names or what variables need to be used or how to use them.

The object model advantages are that it shows what functions need to be created or what is already created along with what parameters and variables are being used or need to be used. All of this is contained in classes. The object model should also show the relationship between classes displaying how they are related in terms of Object-Oriented Programming. A disadvantage of the object model is that it lacks what a process model shows, how something works logically and the interactions between different parts of the system internally, which is why it is important to have both process and object models in your project.

**References**

Khifer, Zend. “Zend Khifer.” Brogramo, Brogramo, <https://brogramo.com/what-are-the-differences-between-an-object-and-a-process-model/#:~:text=Process%20modeling%20and%20object%20modeling,model%20shows%20a%20system's%20processes>.