# CS 255 Model Application Short Paper

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## Process Model Application

[How would you apply a process model to a design for the DriverPass scenario? Remember, you do **not** need to create diagrams for this paper.]

I would apply a process model to a design for the DriverPass scenario by recognizing the model, its structure, and its purpose in relation to the DriverPass application and the processes which compose it. A process model provides identification and modeling for the key process involved in the system, such as user registration, user verification, driver verification and assignment, ride booking, ride tracking, payment processing, and payment confirmation. Each process would have the series of steps performed attached in their particular order. The goal of the process model is to visualize the the flow of data, improve the efficiency and effectiveness of the process, and identify areas where improvement is necessary, i.e. bottlenecks within the process. For DriverPass, I would likely use a Data Flow Diagram to model the process.

I would begin with understanding the roles involved within the process. The client’s goal is to allow student drivers to take practice tests and book driving tutoring sessions using an app. There is a second goal of selling package options for this service. This process contains actors in the roles of administrators who govern the system, students who purchase the service, and drivers who mentor the students. The driver should be able to access and view the student’s academic records in relation to DriverPass’s training and testing system. The driver should also be able to leave notes for each session marked by the start time, end time, and date of session for the student to review. The customer should be able to register a new account, log into a pre-existing account, purchase a package, take practice exams, view their progress, and view other resources provided by their package. Both the customer and driver can arrange their scheduled sessions. The administrator can modify user accounts, instructor accounts, and enable or disable driver session packages.

Next I would understand the databases involved. There is a login database which stores user login and profile information which is created when a new account is registered and can be updated anytime by a logged in user. Students can only update their own account information. Administrators can update anyone’s. A database exists for packages in the store by package name, permission sets granted, enabled or disabled, and their cost. A database exists of instructors available. A database exists per instructor of drives scheduled and students have access to view drives scheduled with them, and to create new drives scheduled with their instructor. There is a database for lessons provided by the package, and a database is kept on the students’ progress in these lessons.

Finally I’d seek to understand the processes that tie these objects together and elaborate on their relationships and the way through which data is sourced and processed. Data is sourced by a student while creating an account and throughout use of the system. Data is sourced by an administrator throughout the use of the system. Data for practice questions and driving guidelines and policy is sourced by the DMV. This data is used throughout the processes described above. Databases would be constructed around the processed data or may be used to source relevant data upon a request at any point in the process. Some processes that would occur throughout the system are the customer adding a payment method then purchasing a DriverPass package, update account information, update test completeness information, allowing the customer to take an online practice test, etc. The data would be processed until the user obtains their driver’s license or their license for the package expires. Understanding this all allows creation of a complete, consistent data flow diagram.

## Object Model Application

Similarly to a process model, an object model allows for a visualization of the system, though the scope is the visible reality of the architecture of the system, rather than the actual process. The visualization is on the objects, methods, and attributes of the system, so the model becomes less linear and more mechanical. The goal is to see how a system is built and what its composition is and help design the system and necessitates a degree of completeness as well, and also can show where objects, classes, and attributes connect and interact, and can specify instantiation relationships such as 0..1 or 0..\* for the DriverPass scenario. There is an object oriented approach to this model.

I would apply an object modeling approach by understanding the involved objects, their attributes, their methods, and the relationships between different objects and classes. This would involve something like creating a class for the concept of user; The user may create an account and update or modify their own account. There would be attached attributes username, phone number, email address, password, possibly among other things. This would be extended to the classes student, driver, and administrator. There would be many instances of ‘scheduledDrive’s to each one instance of a calendar per one instance of a student.

## Process and Object Model Comparison

In the context of DriverPass’s webapp and mobile apps, there are a few differences of note that make process modeling superior for the purpose. Process models have more to do with how the system is utilized and processes data, therefore provide a more useful overview for this multiplatform webapp than a more specific and more technical object model, whose scope is the mechanically relevant objects, their methods, and their functions. Because the client’s perspective and interview is currently the best source of information in regards to the project, and because the client is thinking in terms of how data should be processed and what the app should be capable of, the process model is also the best at communicating the client’s project needs. A disadvantage of the process model is that it is not necessarily as technical on the development side of things, so developers would have to determine the best way of configuring a program to process information in that way. As well, the process model may be simple and give the impression of incompleteness if not structured and presented well. Contrarily, an object model may be overwhelmingly complex due to its nature and lack of a clear data flow direction, though it can provide in depth technical and architectural detail fairly easily.

In an ideal situation, both an object and process model would be provided for the client because both can provide a different perspective on the project and can work in tandem to provide an overview as well as a blueprint of the system.