**DAILY ASSESSMENT FORMAT**

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| **Date:** | **16/July/2020** | **Name:** | **Prashantha naik** |
| **Course:** | **Mathematics for Machine**  **Learning: Linear Algebra** | **USN:** | **4al17ec074** |
| **Topic:** | **Week 4** | **Semester & Section:** | **6th b** |
| **GitHub Repository:** | **prashanth\_course** |  |  |

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| **FORENOON SESSION DETAILS (9.00am to 1.00pm)** |
| **Index notation, also commonly known as subscript notation or tensor notation,**  **is an extremely useful tool for performing vector algebra. Consider the coordinate**  **system illustrated in Figure 1. Instead of using the typical axis labels x, y, and z,**  **we use x1, x2, and x3, or**  **xi i = 1, 2, 3**  **The corresponding unit basis vectors are then eˆ1, eˆ2, and eˆ3, or**  **eˆi i = 1, 2, 3**  **The basis vectors eˆ1, eˆ2, and eˆ3 have the following properties:**  **eˆ1 · eˆ1 = ˆe2 · eˆ2 = ˆe3 · eˆ3 = 1 (1)**  **eˆ1 · eˆ2 = ˆe1 · eˆ3 = ˆe2 · eˆ3 = 0 (2)**  **The Scalar Product in Index Notation We now show how to express scalar products (also known as inner products or dot products) using index notation. Consider the vectors ~a and ~b, which can be expressed using index notation as**  **a = a1eˆ1 + a2eˆ2 + a3eˆ3 = aieˆ**  **b = b1eˆ1 + b2eˆ2 + b3eˆ3 = bjeˆj**  **In mathematics, particularly linear algebra and numerical analysis, the Gram–Schmidt process is a method for orthonormalizing a set of vectors in an inner product space, most commonly the Euclidean space Rn equipped with the standard inner product. The Gram–Schmidt process takes a finite, linearly independent set S = {v1, ..., vk} for k ≤ n and generates an orthogonal set S′ = {u1, ..., uk} that spans the same k-dimensional subspace of Rn as S.**  **The method is named after Jørgen Pedersen Gram and Erhard Schmidt, but Pierre-Simon Laplace had been familiar with it before Gram and Schmidt.[1] In the theory of Lie group decompositions it is generalized by the Iwasawa decomposition.**  **The application of the Gram–Schmidt process to the column vectors of a full column rank matrix yields the QR decomposition (it is decomposed into an orthogonal and a triangular matrix).**  **Orthogonal sets Let V be a vector space with an inner product. Definition. Nonzero vectors v1, v2, . . . , vk ∈ V form an orthogonal set if they are orthogonal to each other: hvi , vji = 0 for i 6= j. If, in addition, all vectors are of unit norm, kvik = 1, then v1, v2, . . . , vk is called an orthonormal set. Theorem Any orthogonal set is linearly independent.**  **The Gram-Schmidt process can be used to check linear independence of vectors! The vector x3 is a linear combination of x1 and x2. Π is a plane, not a 3-dimensional subspace. We should orthogonalize vectors x1, x2, y.**  **Modifications of the Gram-Schmidt process Another modification is a recursive process which is more stable to roundoff errors than the original process. Suppose x1, x2, . . . , xn is a basis for an inner product space V** |
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| **Date:** | **16/July/2020** | **Name:** | **Prashantha naik** | |
| **Course:** | **Salesforce** | **USN:** | **4al17ec074** | |
| **Topic:** | **Developer** | **Semester&Section:** | **6th b** | |
| **Git hub repository** | **prashanth\_course** |  |  | |
| **AFTERNOON SESSION DETAILS (2.00pm to 5.00pm)** | | | |
| Get to Know the Lightning Platform APIs Earlier, we talked about declarative development in Salesforce using tools like Lightning App Builder and Process Builder. These tools require very little interaction with Salesforce’s underlying APIs.  As you move toward more programmatic development, you find a robust set of APIs that let you access your Salesforce data in a variety of ways. You already saw the API in action when we looked at Lightning components, Apex, and Visualforce.  Put simply, every object in your org has an API name that lets you access data for that object. Let’s look at the SOQL query from the last unit again:  Property\_\_c property = [SELECT Name, Price\_\_c from Property\_\_c WHERE Id=:propId];  Copy  The \_\_c denotes that the object is a custom object or field. This query is using the automatically created API access point for the Property object to retrieve information about properties in your org.  Here’s a brief look at the APIs Salesforce provides and what they’re used for.   | **API** | **What you can do with it** | | --- | --- | | SOAP API | Integrate your org’s data with other applications using standard SOAP protocols. | | REST API | Access objects in your org using standard REST protocols. | | Metadata API | Manage customizations in your org and build tools that manage your metadata model. | | Tooling API | Build custom development tools for platform applications. | | Marketing Cloud API | Expose Marketing Cloud capabilities with the REST API and get comprehensive access to most email functionality with the SOAP API. | | Bulk API | Load, delete, and perform asynchronous queries on large data sets. | | Streaming API | Send and receive notifications securely and efficiently. Notifications can reflect data changes in your org, or custom events. | | Chatter REST API | Build UI for Chatter, Communities, Recommendations, Files, Topics, and more. | | Mobile SDK | While it’s technically a software development kit, it’s worth including here. Integrate Native or Hybrid mobile apps directly with Salesforce. |   If you want to learn more about Lightning Platform APIs, check out the [Lightning Platform API Basics module](https://trailhead.salesforce.com/modules/api_basics) in the resources. Unleash Your Apps with Heroku While APIs can be used both within Salesforce and with your external systems, Heroku is all about interacting with the outside world. Heroku is a web development platform that lets you quickly build, deploy, and scale web apps.  One of the great things about Heroku is that you have a lot of flexibility in how you write your app. If you’re a Java nerd, you can write your app in Java. If you’re a diehard Python fan, Heroku won’t get in your way. PHP your jam? PHP to your heart’s content!  Heroku is built on Amazon Web Services (AWS), meaning a lot of infrastructure concerns you might have in standard web app development are taken care of for you. On top of that, Heroku Connect unifies your Salesforce data with your Heroku Postgres data so you don’t have to manage moving information across platforms. No worrying about infrastructure or data storage means more time for you to focus on new development..  Let’s briefly head back to our DreamHouse scenario. We’ve looked at the Salesforce side. It’s an internal employee productivity app where real estate agents can track their properties, their customers, and their customers’ favorite properties.  But where are the customers seeing these properties? On the DreamHouse Heroku app, of course! Check it out [here](https://ty-dreamhouse-web-app.herokuapp.com/). IoT, Bots, and More The topics we’ve covered up to now are more or less the “essentials” of our development environment. But there are many other opportunities for you to flex your development skills and have some fun with the platform. IoT Depending on your industry, integrating Salesforce with the Internet of Things (IoT) may or may not be a necessity. However, with smart devices on the rise, it’s not a bad idea to get familiar with developing with IoT in mind.  For example, when DreamHouse real estate agents prepare to show a house to a potential buyer, there are things they always do, such as unlock the doors to the house, turn on the lights, and make sure the temperature is just right.  What if real estate agents could make these preparations on-the-go from their Salesforce mobile app? By connecting smart devices with Salesforce, they can do exactly that. Using a combination of Visualforce or Lightning components, microservices hosted on Heroku, and the IoT interfaces from smart locks, lights, and thermostats, you can build IoT control right on the platform. | | | |
| Bots Chatbots are typically used in external customer service. But you can also build them right into your Salesforce org to help your employees navigate their data.  Let’s think about DreamHouse again. Say a family gets in touch with a real estate agent and tells her they want to purchase a three bedroom home in the Boston area. To find appropriate homes for this family, the real estate agent can take advantage of bots. Back in our DreamHouse org, we can see a bot in action. | | | |