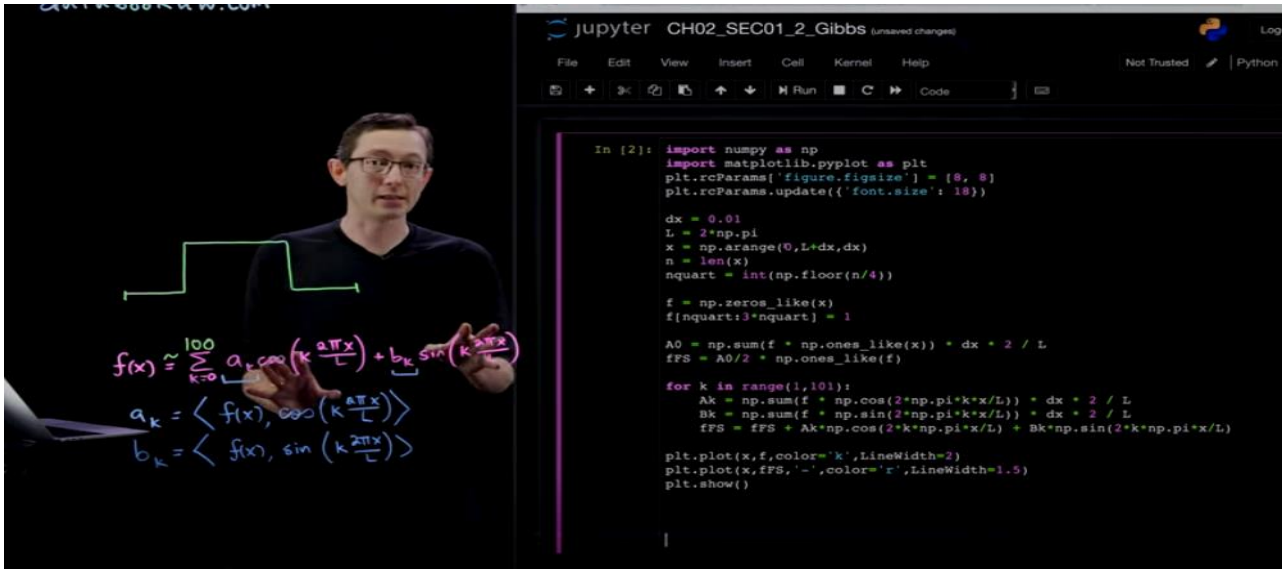
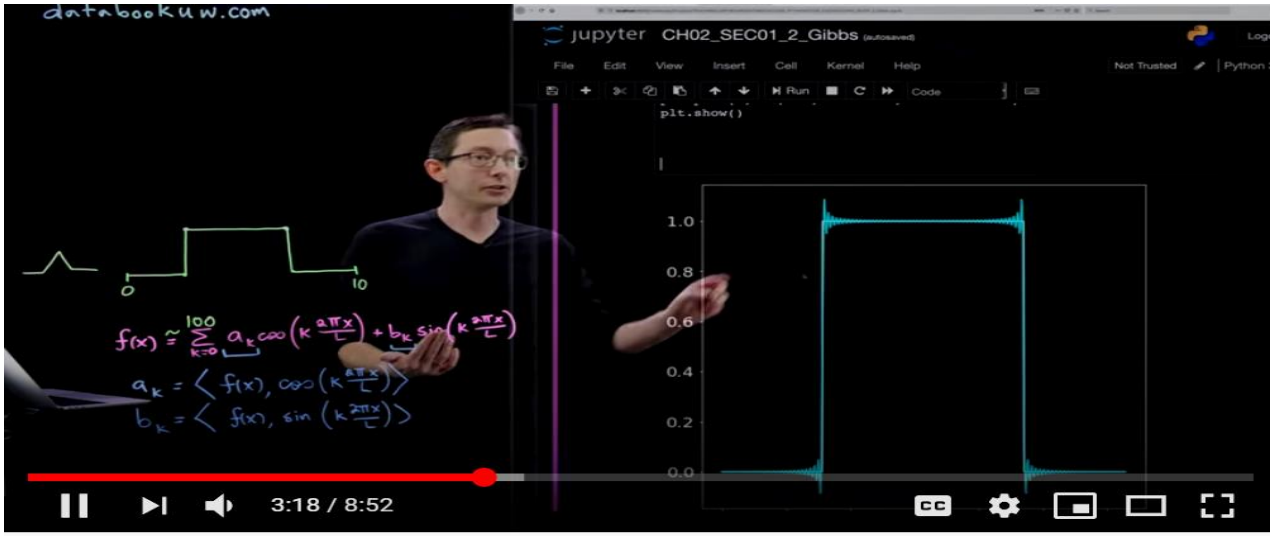
DAILY ASSESSMENT FORMAT

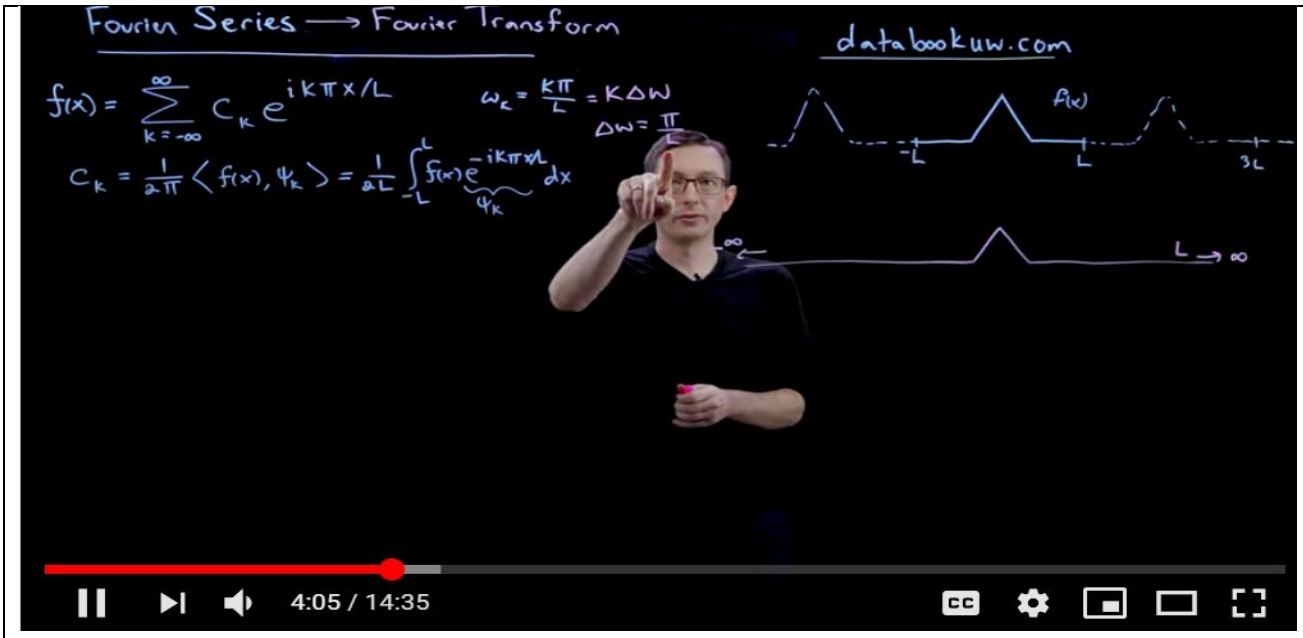
Date:	**26/5/2020**	**Name:**	**Shilpa S**
Course:	**Digital signal processing**	**USN:**	**4AL14EC078**
Topic:	**Gibbs phenomena using python, Forier transform derivatives, laplace transform of first order, applications of Z transform**	**Semester & Section:**	**8th sem A sec**
Github Repository:	**Shilpa_online**		

FORENOON SESSION DETAILS

Image of session







Report –

FOURIER SERIES AND GIBBS PHENOMENA

The Gibbs phenomenon, discovered by Henry Wilbraham (1848) and rediscovered by J. Willard Gibbs (1899), is the peculiar manner in which the Fourier series of a piecewise continuously differentiable periodic function behaves at a jump discontinuity. The nth partial sum of the Fourier series has large oscillations near the jump, which might increase the maximum of the partial sum above that of the function itself. The overshoot does not die out as n increases, but approaches a finite limit.[3] This sort of behavior was also observed by experimental physicists, but was believed to be due to imperfections in the measuring apparatus. This is one cause of ringing artifacts in signal processing.

Informally, the Gibbs phenomenon reflects the difficulty inherent in approximating a discontinuous function by a finite series of continuous sine and cosine waves. It is important to put emphasis on the word finite because even though every partial sum of the Fourier series overshoots the function it is approximating, the limit of the partial sums does not. The value of x where the maximum overshoot is achieved moves closer and closer to the discontinuity as the number of terms summed increases so, again

informally, once the overshoot has passed by a particular x, convergence at that value of x is possible.

There is no contradiction in the overshoot converging to a non-zero amount, but the limit of the partial sums having no overshoot, because the location of that overshoot moves. We have pointwise convergence, but not uniform convergence. For a piecewise C^1 function the Fourier series converges to the function at every point except at the jump discontinuities. At the jump discontinuities themselves the limit will converge to the average of the values of the function on either side of the jump. This is a consequence of the Dirichlet theorem.

The Gibbs phenomenon is also closely related to the principle that the decay of the Fourier coefficients of a function at infinity is controlled by the smoothness of that function; very smooth functions will have very rapidly decaying Fourier coefficients (resulting in the rapid convergence of the Fourier series), whereas discontinuous functions will have very slowly decaying Fourier coefficients (causing the Fourier series to converge very slowly).

Note for instance that the Fourier coefficients $1, -1/3, 1/5, \ldots$ of the discontinuous square wave described above decay only as fast as the harmonic series, which is not absolutely convergent; indeed, the above Fourier series turns out to be only conditionally convergent for almost every value of x. This provides a partial explanation of the Gibbs phenomenon, since Fourier series with absolutely convergent Fourier coefficients would be uniformly convergent by the Weierstrass M-test and would thus be unable to exhibit the above oscillatory behavior.

By the same token, it is impossible for a discontinuous function to have absolutely convergent Fourier coefficients, since the function would thus be the uniform limit of continuous functions and therefore be continuous, a contradiction. See more about absolute convergence of Fourier series.

FOURIER TRANSFORM DERIVATIVE.

It uses the time as a function of frequency in many physics applications. In mathematical terms, we can express the Fourier Transform ‘h ’ on a function that can be integrated and has the Domain and range from real to constant Numbers. This is considered for each and every real number.

The Laplace Transform can be used to solve differential equations using a four step process.

1. Take the Laplace Transform of the differential equation using the derivative property (and, perhaps, others) as necessary.
2. Put initial conditions into the resulting equation.
3. Solve for the output variable.
4. Get result from Laplace Transform tables. If the result is in a form that is not in the tables, you'll need to use the Inverse Laplace Transform.

APPLICATIONS OF Z TRANSFORM

Z transform is used in many applications of mathematics and signal processing. The lists of applications of z transform are:-

-Uses to analysis of digital filters.
-Used to simulate the continuous systems.
-Analyze the linear discrete system.
-Used to finding frequency response.
-Analysis of discrete signal.
-Helps in system design and analysis and also checks the systems stability.
-For automatic controls in telecommunication.
-Enhance the electrical and mechanical energy to provide dynamic nature of the

system.

If we see the main applications of z transform than we find that it is analysis tool that analyze the whole discrete time signals and systems and their related issues. If we talk the application areas of

This transform wherever it is used, they are:-

-Digital signal processing.

-Population science.

-Control theory.

-Digital signal processing

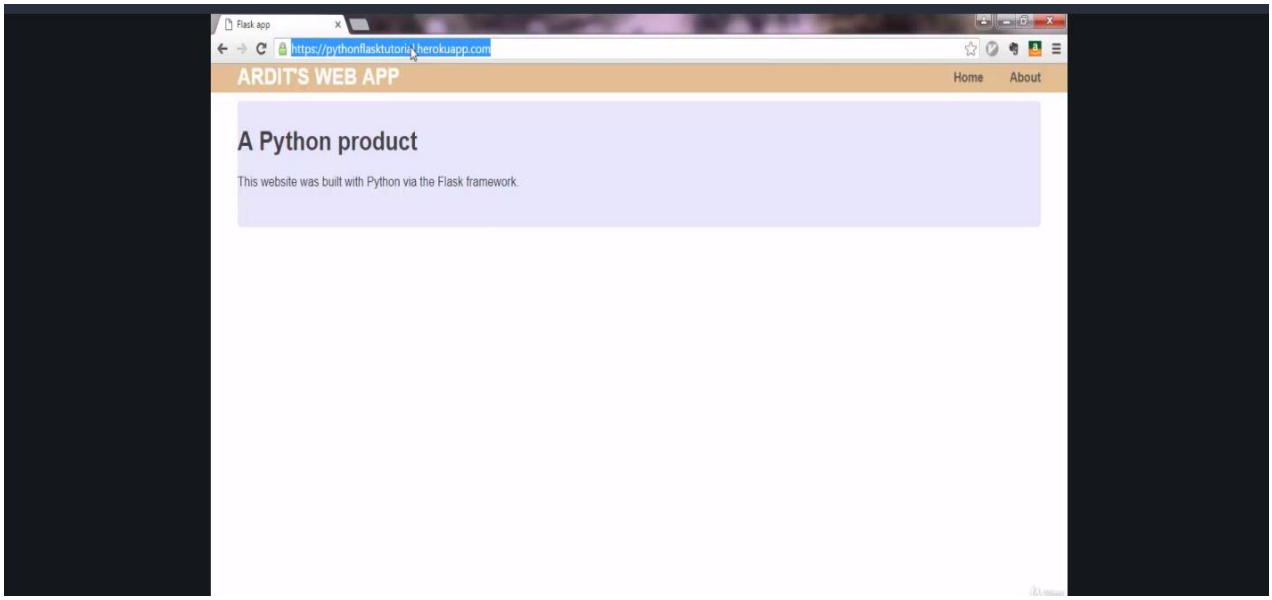
LAPLACE TRANSFORM

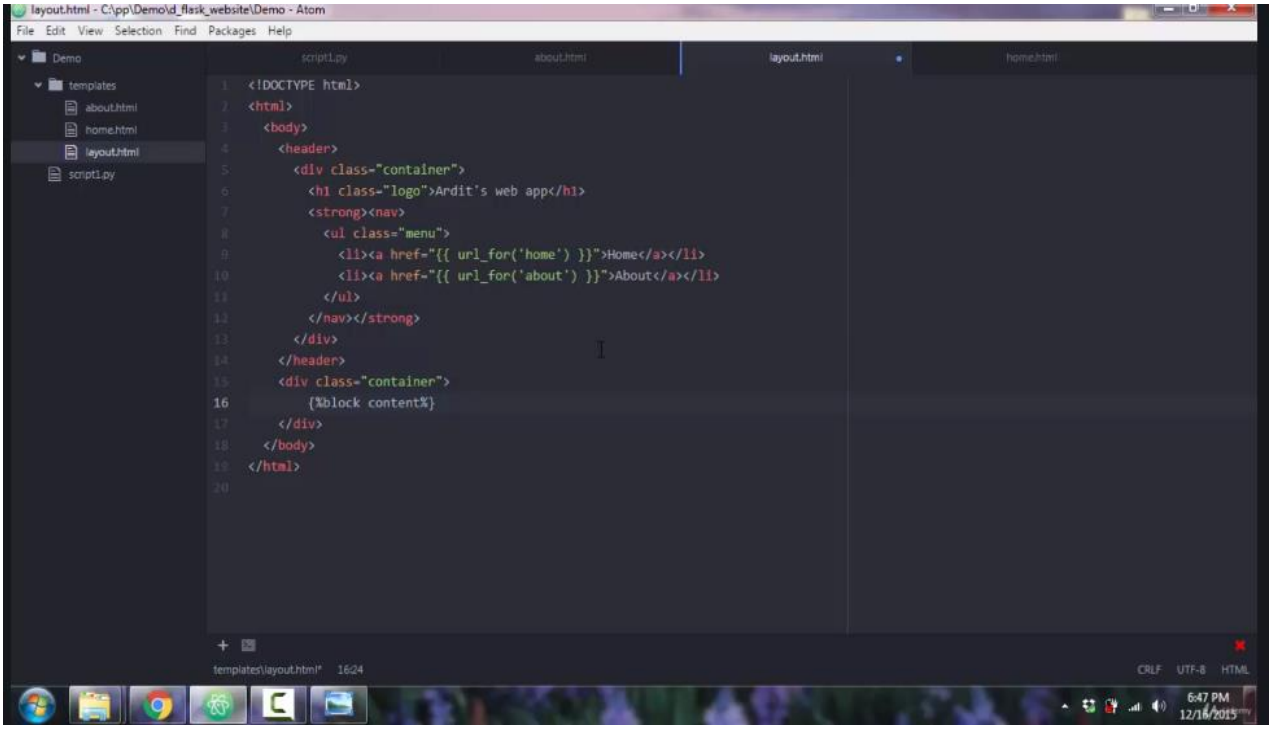
The Laplace transform, named after its inventor Pierre-Simon Laplace (/ləˈplɑːs/), is an integral transform that converts a function of a real variable {\displaystyle t} (often time) to a function of a complex variable {\displaystyle s} (complex frequency). The transform has many applications in science and engineering because it is a tool for solving differential equations. In particular, it transforms differential equations into algebraic equations and convolution into multiplication.

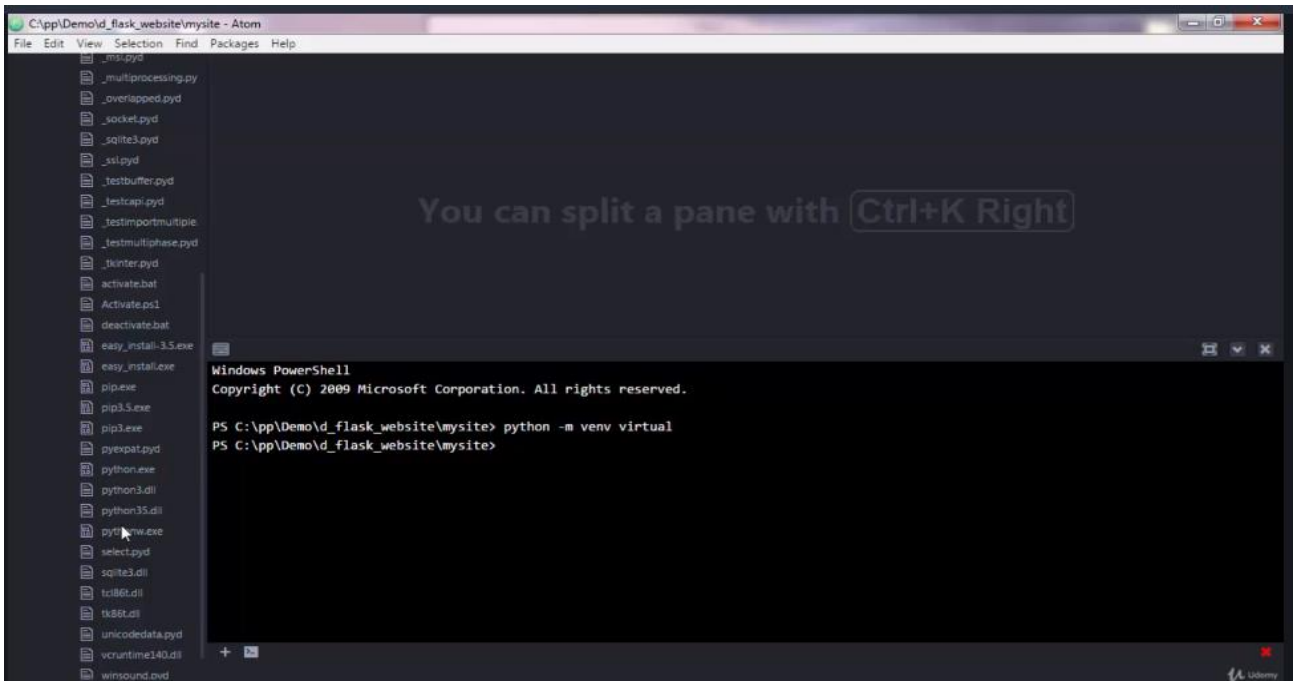
Date:26/5/2020
Course: Python
Topic:
Application 4:
Build a personal website with python and flask

Name: Shilpa S
USN:4AL14EC078
Sem :8th sem
Section: A sec

AFTERNOON SESSION DETAILS







REPORT:

BROWSER CATCHING

we will add CSS styling to the webpage. Sometimes, when you make a change to the CSS file and reload the webpage, the changes are not shown because the browser uses the previous cached styling. If this happens, open the browser in private (incognito) mode and load the webpage there.

HTML TEMPLATE

The <template> tag holds its content hidden from the client.

Content inside a <template> tag will not be rendered.

The content can be made visible and rendered later by using JavaScript.

Use the <template> tag when you have HTML code you want to use over and over again, but not until you ask for it. To do this without the <template> tag, you have to create the HTML code with JavaScript to prevent the browser from rendering the code.

The **HTML Content Template (**<template>**) element** is a mechanism for holding HTML that is not to be rendered immediately when a page is loaded but may be instantiated subsequently during runtime using JavaScript.
Think of a template as a content fragment that is being stored for subsequent use in the document. While the parser does process the contents of the <template> element while loading the page, it does so only to ensure that those contents are valid; the element's contents are not rendered, however.

```
<table id="producttable">
  <thead>
    <tr>
      <td>UPC_Code</td>
      <td>Product_Name</td>
    </tr>
  </thead>
  <tbody>
    <!-- existing data could optionally be included here -->
  </tbody>
</table>

<template id="productrow">
  <tr>
    <td class="record"></td>
    <td></td>
  </tr>
</template>
```

The Python script handles the communication between the web server and the web client (i.e. browser) while the HTML documents are responsible for the structure of the age content.

Now we need to add some style formatting to the HTML structure using CSS (Cascading Style Sheets). That is done by creating a CSS file and connecting it to our HTML files. CSS is a style language that likewise HTML it is also very easy to learn. Python is much harder to learn than CSS,. So a rule of thumb is if you know Python, learning CSS should be a breeze.

Remember that HTML template files HTML go inside the templates folder. CSS stylesheets are considered static files. There is no interaction with their code, like there is with HTML templates. Therefore, flask has reserved a separate folder where you should put static files such as CSS, Javascript, images or other files. That folder should be created by you and should be named static. It's also good practice to create another folder inside static and name it css. Now, create an empty file inside the css and name the file something like main.css

How to create Virtual Environment?

Step – 1

Open your terminal and create a directory to store all your virtual environments, using the command mkdir Environments which is an acronym of "make directory".Now go inside the directory using the command CD which stands for call Directory, CD Environments

Step 2

Now we will use a module named **virtualenv** to create isolated virtual environments. But first, let's install this module by the following command,

pip install virtualenv

If you get an error like pip command not found then you have to install **pip** package manager first, you can learn this here.To verify a successful installation run this

virtualenv –version Now we can proceed to create virtual environment.