**DAILY ASSESSMENT FORMAT**

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| **Date:** | **28-05-2020** | **Name:** | **Anand kumar k** |
| **Course:** |  | **USN:** | **4al16ec002** |
| **Topic:** | **Fourier transform** | **Semester & Section:** | **8thsem ‘A’ sec** |
| **Github Repository:** | **Anand-courses** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session** |
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| The mathematical concept of a Hilbert space, named after David Hilbert, generalizes the notion of Euclidean space. It extends the methods of vector algebra and calculus from the two-dimensional Euclidean plane and three-dimensional space to spaces with any finite or infinite number of dimensions. A Hilbert space is an abstract vector space possessing the structure of an inner product that allows length and angle to be measured. Furthermore, Hilbert spaces are complete: there are enough limits in the space to allow the techniques of calculus to be used.  The only difference is the measure or "weight" of each point. Since Rn is discrete, each component has weight 1, where in these function spaces each component has weight "dx". The innerproduct on function spaces is exactly the regular dot product, just in infinite dimensions and with a different "weight".  Complex Fourier Series.  The complex Fourier series is presented first with period 2π, then with general period. The connection with the real-valued Fourier series is explained and formulae are given for converting be- tween the two types of representation.  The Fourier Transform is an important image processing tool which is used to decompose an image into its sine and cosine components. The output of the transformation represents the image in the Fourier or frequency domain, while the input image is the spatial domain equivalent.  Fourier Transform: Fourier transform is the input tool that is used to decompose an image into its sine and cosine components. Properties of Fourier Transform: Linearity: Addition of two functions corresponding to the addition of the two frequency spectrum is called the linearity.  It is an algorithm which plays a very important role in the computation of the Discrete Fourier Transform of a sequence. It converts a space or time signal to signal of the frequency domain. The DFT signal is generated by the distribution of value sequences to different frequency component. Working directly to convert on Fourier transform is computationally too expensive. So, Fast Fourier transform is used as it rapidly computes by factorizing the DFT matrix as the product of sparse factors. As a result, it reduces the DFT computation complexity from O(n2) to O(N log N). And this is a huge difference when working on a large dataset. Also, FFT algorithms are very accurate as compared to the DFT definition directly, in the presence of round-off error.  **Fourier transform in python**  # import sympy  from sympy import fft    # sequence  seq = [15, 21, 13, 44]    # fft  transform = fft(seq)  print (transform) |

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| **Course:** |  | **USN:** | **4al16ec002** | |
| **Topic:** | **python** | **Semester & Section:** | **8thsem ‘A’ sec** | |
| **AFTERNOON SESSION DETAILS** | | | |
| **Image of session**      In this section we learned that:   * A list comprehension is an expression that creates a list by iterating over another container. * A **basic**list comprehension:   1. [i\*2 for i in [1, 5, 10]]   Output: [2, 10, 20]   * List comprehension with **if** condition:   1. [i\*2 for i in [1, -2, 10] if i>0]   Output: [2, 20]   * List comprehension with an **if** **and** **else** condition:   1. [i\*2 if i>0 else 0 for i in [1, -2, 10]]   Output: [2, 0, 20] | | | |
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