PHY 105 Mid Semester Exam

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(5^{th} Oct' 2023)

Time Duration for solutions: 90 mins. (10:00 – 11:30 am) Maximum Marks: 15

Note: In all programs ask user to provide input and print output in a proper, self-explanatory format. Give proper name to your program file (**yourname_PHY105_midsem_exam_Q(no).py**). Submit soft copies of your program files. **Copying is not allowed, if instructor found any section of the program to be copied from somewhere, the candidate will be penalized.**

1. Make a flowchart and then write a program that asks the user how many Fibonacci numbers to generate and then generates them using a function for Fibonacci numbers. Print the Fibonacci numbers along with serial number in a formatted way. (*Hint: The Fibonacci seqence is a sequence of numbers where the next number in the sequence is the sum of the previous two numbers in the sequence.* [5]

2. Write a program that prompts for a file name, then opens that file and reads through the file, looking for lines of the form:
X-DSPAM-Confidence: 0.8475
Count these lines and extract the floating point values from each of the lines and compute the average of those values upto four decimal points. Do not use the sum() function or a variable named sum in your solution. Use the file name 'mbox-short.txt' as the file name. [5]

3. Define the range of electromagnetic spectrum (in nm) and write a program to give the type of radiations whose wavelength is provided by the user. If the range lie in the visible spectrum then also mention the colour of the light. [5]

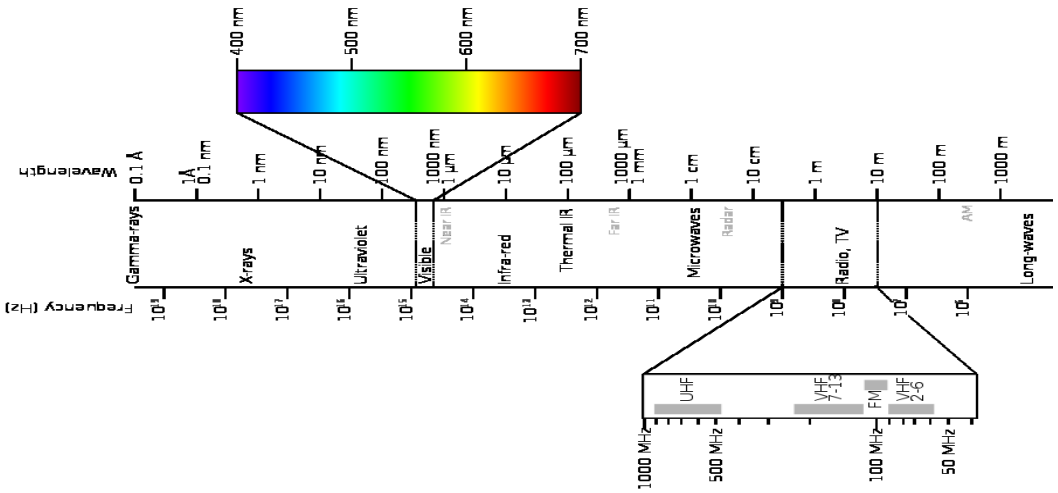

Figure 1: The electromagnetic spectrum (Image source: Wikipedia)