**Week 4- Programs on Iterative constructs, Lists and Tuples**

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| Program 1 | 1. Write a program to generate fibonacci series till n terms 2. Find factorial of a number 3. prints all prime numbers from 2 - n |
|  | **Algorithm:** |
|  | **Program with comments:** |
|  | **0 1 1 2 3 5**  **a)**  **f1=0**  **f2=1**  **while loop**  **f3=f1+f2**  **print-f3**  **f1=f2**  **f2=f3** |
| Program 2 | Write a python program to perform the following operations using given list as input:   1. **Given a heterogenous list, create separate lists for different types of data. Write a python program to achieve the same**. 2. **Sort in ascending and descending order**   **i)list of strings ii) list of number** |
|  | **Algorithm:** |
|  | **Program with Comments:** |
|  | **a)**  **l1=[1,2,3.5,(1,2,3),[11,12],{23,34},’aaa’]**  **l\_int=[];l\_float=[];l\_str=[];l\_tuple=[];l\_list=[];l\_set=[]**  **for i in l1:**  **c=type(i)**  **if(c==int):**  **l\_int.append(i)**  **elif(c==float):**  **l\_float.append(i)**  **b)**  **>>> strlist=['aaa','xxx','bbb']**    **>>> numlist=[23,12,34]**    **>>> strlist.sort()**    **>>> strlist**    **['aaa', 'bbb', 'xxx']**  **>>> strlist.sort(reverse=True)**    **>>> strlist**    **['xxx', 'bbb', 'aaa']**  **>>>** |
| Program 3 | Generate heart rate randomly between 50 to 120 at time interval of 3 hours for 24 hours.   1. **If heart rate is between 50-65 print as bradycardia(lower heart rate) if greater than 100 print as tachycardia(higher heart rate). Else print as normal.** 2. **Count number of Bradycardia and tachycardia if any of this is greater than 3 display as risk.** 3. **Print the maximum heart rate and minimum heart rate** |
|  | **Algorithm:** |
|  | **Program with comments:** |
|  | **import random**  **bc=0**  **tc=0**  **heart\_rate=[]**  **while(c<=8):**  **i= random.randint(50,120)**  **heart\_rate.append(i)**  **c=c+1**  **print(heart\_rate)**  **for i in heart\_rate:**  **if i** |
| Program 4 | Enter marks of students till you need to stop.   1. **Find maximum marks** 2. **Find number of students who have scored highest** 3. **Find second highest marks** 4. **Enter fail marks and remove if fail marks present in list** |
|  | **Algorithm:** |
|  | **Program with comment:** |
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| Program 5 | Write a python program which accepts a sequence of comma-separated values from console and generate as a list and as a tuple. |
|  | **Algorithm:** |
|  | **Program with comment** |
|  | **>>> x=input('enter the values ')**  **'enter the values a,b,c,d,h**  **>>> x**  **'a,b,c,d,h'**  **>>> y=list(x.split(','))**  **>>> y**  **['a', 'b', 'c', 'd', 'h']**  **z=tuple(y)** |
|  | **Practice programs for students(need not submit)** |
| Program 1 | 1. Clear the rightmost bit of a given number. 2. Set rightmost bit 3. Clear bit at a position |
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| Program 2 | Write a python program to count the number of Vowels and consonants in a given string and store in separate list. |
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