<https://colab.research.google.com/drive/18U9NO7oxak6brlioeJirYBdP4JfRNHar?usp=sharing>

1. Primiti o lista vida si o lista de operatii. Executati ops:

operatie 1 x : se introduce x in multime  
operatie 2: se extrage si se afiseaza cel mai mic element

#FARA HEAPURI

xs = [] # m operatii  
ops = [  
 (1, 1), # xs = [1]  
 (1, 5), # xs = [1, 5]  
 (1, 3), # xs = [1, 3, 5]  
 (2,), # xs = [3, 5] => 1  
 (1, 9), # xs = [3, 5, 9]  
 (2,), # xs = [5, 9] => 3  
 (2,), # xs = [9] => 5  
 (1, 4), # xs = [4, 9]  
 (2,), # xs = [9] => 4  
 (2,) # xs = [] => 9  
]  
n = len(ops)  
for i in range (0, n):  
 if ops[i][0] == 1:  
 xs.append(ops[i][1])  
 xs.sort()  
 print(xs)  
 print()  
 else:  
 xs.pop(0)  
 print(xs)  
 print()

#CU HEAPURI

from heapq import heappush, heappop  
  
xs = [] # m operatii  
ops = [  
 (1, 1), # xs = [1]  
 (1, 5), # xs = [1, 5]  
 (1, 3), # xs = [1, 3, 5]  
 (2,), # xs = [3, 5] => 1  
 (1, 9), # xs = [3, 5, 9]  
 (2,), # xs = [5, 9] => 3  
 (2,), # xs = [9] => 5  
 (1, 4), # xs = [4, 9]  
 (2,), # xs = [9] => 4  
 (2,) # xs = [] => 9  
]  
  
for i in range(0,len(ops)):  
 if ops[i][0] == 1:  
 heappush(xs, ops[i][1])  
 print(xs)  
 else:  
 heappop(xs)  
 print(xs)

1. Fie multimea H = {2^x \* 3^y \* 5^z | x, y, z ∊ N}. Scrieti primele m elemente alte multimii.

from heapq import heappush, heappop  
  
m = int(input("Introduceti m-ul:"))  
  
xs = [1]  
  
while len(xs) < m:  
 minim = min(xs)  
 heappush(xs, 2 \* minim)  
 heappush(xs, 3 \* minim)  
 heappush(xs, 5 \* minim)  
 heappop(xs)  
  
print(xs)

1. Primiti N vectori sortati avand numar variabil de componente. Se cer primele M componente ale vectorului care reprezinta reuniunea celor N vectori din input.

from heapq import heappush, heappop  
  
xs = []  
  
n = int(input("n="))  
m = int(input("m="))  
  
for i in range(0, n):  
 x = int(input("x="))  
 for j in range(0, x):  
 y = int(input("y="))  
 heappush(xs, y)  
  
xs.sort()  
print(xs[:m])

1. Se considera n proiecte, pentru fiecare proiect cunoscandu-se profitul, un termen limita (sub forma unei zi din luna) si faptul ca implementarea sa dureaza exact o zi. Sa se gaseasca o modalitate de planificare a unor proiecte astfel incat profitul total sa fie maxim.