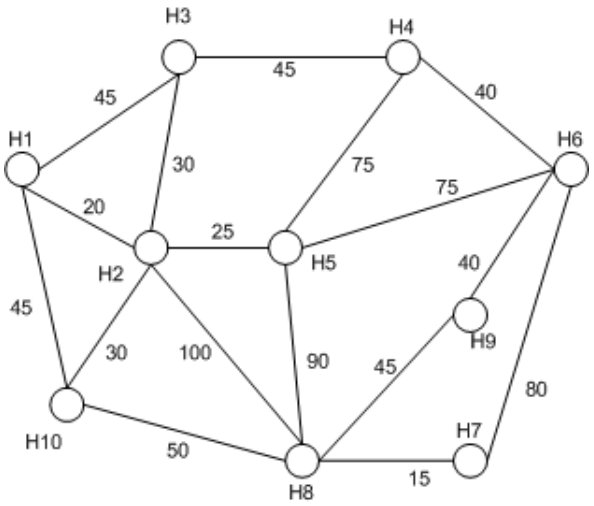
PSG COLLEGE OF TECHNOLOGY
DEPARTMENT OF APPLIED AMTHEMATICS AND COMPUTATIONAL SCIENCES
IV Semester MSc Data Science
Work sheet – Greedy Technique

1. Implement Prims and Kruskals algorithm for the given graph



2 Priyanka visisted a kids shop. There are N toys and their weight is represented bya n array W={w,w2,...,wN} each toy costs 1 unit and if she buys a toy with weight wk, then she can get all other toys whose weight lies between (wk,wk+4) (both inclusive) free of cost.

Input

5

1 2 3 17 10

Output

3

Hint : she buys 1st toy with weight 1 for 1 unit and gets 2nd and 3rd toy for free since their weight lies between [1,5] and she has to buy last two toys separately

4 Given an array of jobs where every job has a deadline and associated profit if the job is finished before the deadline. How to maximize total profit if only one job can be scheduled at a time.

Job (i)	Profit	Deadline
A	100	2
B	19	1
C	27	2
D	25	1
E	15	3

Solution is {C, A, E} with profit of 142

JobID	Deadline	Profit
a	2	100
b	1	19
c	2	27
d	1	25
e	3	15

4. You are driving a car with a range of R miles per tank of gas. You must travel M miles total from origin to destination. Along your trip, there are gas stations at various distances from your origin. Plan gas stops so that you do not run out of gas (running out just as you pull into a staion is OK), and so that you stop as few times as possible.

Example: You get 400 miles on a tank, and must travel 2400 miles (R = 400; M = 2400) Stations are at:

300, 350, 400, 500, 750, 790, 810, 900, 950, 1100, 1150, 1180, 1210, 1300, 1450, 1550, 1771, 1801, 1901, 2250

Develop two different greedy algorithms for this problem, each arriving at different solutions for the case above.