Write a program for Following Scenarios

Q1. A wealthy man needed to pay the mason building his house. He was running low on cash, so he decided to pay the mason with a gold chain with 7 links. The masons fee was equivalent to one gold link a day. The wealthy man needed to pay the mason each day, as otherwise he would stop working. If he overpaid, the mason might run away with the extra payment. The wealthy man did not want to make too many cuts in the chain as he wanted it back once he had the cash to pay the mason in cash. Write a program to find minimum number of cuts that the wealthy man needs to make the chain?

Q2. A hunter has a lion, goat and carrot and he wants to cross the river taking three of these along. However, there is a boat that can fit him plus either the lion, the goat, or the carrot. He is confused because if the lion and the goat are alone on one shore, the lion will eat the goat. If the goat and the carrot are alone on the shore, the goat will eat the carrot. Remove hunters confusion by suggesting him a way to bring all the three things to the other shore.

Q3. When visiting an insane asylum, I asked two inmates to give their ages. They did so, and then, to test their arithmetical powers, I asked them to add the two ages together. One gave me 44 as the answer, and the other gave 1,280. I immediately saw that the first had subtracted one age from the other, while the second person had multiplied them together. What were their ages?

Q4. The Maximum distance that can be travelled by a tyre of a car is 20000 miles before wearing off and Car has 4 tyres and 1 spare type. You are allowed to change tyres (using the spare tyre) an unlimited number of times. Build logic to answer, what is the maximum distance the car can travel before you are forced to buy a new tyre?

Q5. We have 10 identical bottles of identical pills (each bottle contains hundred pills). Out of 10 bottles 9 have 1 gram of pills but 1 bottle has pills of weight of 1.1 gram. Given a measurement scale, how would you find the heavy bottle? You can use the scale only once.

Q6. Three drinks- Coke, Limca or Either (Either Coke or Limca) are offered by a machine at the bus stop. But the machine has been wired up wrongly by the staff at the bus stand so that each button does not give what it claims. If each drink costs Rs 10, how much minimum money do you have to put into the machine to work out which button gives which selection?

Q7. A new airlines company is planning to start operations in a country. The company has identified ten different cities which they plan to connect through their network to start with. The flight duration between any pair of cities will be less than one hour. To start operations, the company has to decide on a daily schedule. The underlying principle that they are working on is the following:

Any person staying in any of these 10 cities should be able to make a trip to any other city in the morning and should be able to return by the evening of the same day.

If the underlying principle is to be satisfied in such a way that the journey between any two cities can be performed using only direct (non-stop) flights, then the minimum number of direct flights to be scheduled is:

Q8. An agent emailed a code word to his head office. They are "COS AIS EUC RAO REI". But four of these five words are fake and only one contains the information. He also mailed a sentence as a clue – "if I tell you any one character of the code word, you would be able to tell the number of vowels in the code word". Can you tell what the code word is?

Q9. In a shop, there are 4 dolls of different heights P,Q,R and S. S is neither as tall as P nor as short as R. Q is shorter than S but taller than R. If Kittu wants to purchase the tallest doll, which one should she purchase?

Q10. The letters J, K, L, M, N, O and Z, represent seven consecutive integers from 42 to 53; not necessarily in that order,

   (1). O is as much less than K as L is greater than M.
   (2). Z is greater than O.
   (3). K is the middle term.
   (4). J is 3 greater than M.

 Can you find the sequence of letters from the lowest value to the highest value?

Q11. Given two hourglass of 4 minutes and 7 minutes, the task is to measure 9 minutes.

7 min Hourglass

4 min Hourglass

The task is to measure 9 minutes from these two hourglasses.
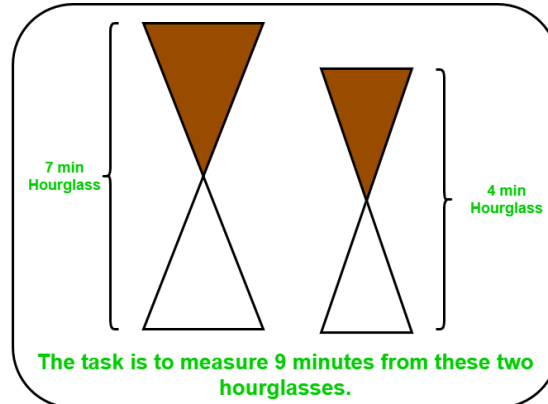
Q12. You have two ropes, each of which takes two hours to burn if lit at one end. These ropes are not homogeneous and some parts of the rope burn quickly than the other parts. If you cut the rope into half, you cannot assume that the half, you cannot assume that the half rope will take one hour to burn. Use these ropes to measure 1 hr 30 min.

Q13. The Emperor ordered his servants to fill up his treasury. Each of the 3 servants, had to go to the treasury, count how much gold coins there was at that moment, and then triple it and leave. Emperor has to reward the servants in some way, so he let each of them take 1 gold coin out before leaving. After all three servants have left; emperor collected exactly 500 gold coins in the treasury. How much gold coins did he have before the order?

Q14. Two trains are on same track and they are coming toward each other. The speed of the first train is 50 km/h and the speed of the second train is 70 km/h. A bee starts flying between the trains when the distance between two trains is 100 km. The bee first flies from first train to second train. Once it reaches the second train, it immediately

flies back to the first train and so on until trains collide. Calculate the total distance travelled by the bee. Speed of bee is 80 km/h.

Q15. Consider a two-player coin game where each Player A and Player B gets the turn one by one. There is a row of even number of coins (e.g. 18 20 15 30 10 14), and a player on his/her turn can pick a coin from any of the two corners of the row. The player that collects coins with more value wins the game. Develop a strategy for the player making the first turn i.e, Player A, such that he/she never loses the game.

Q16. 100 people standing in a circle in an order 1 to 100. No. 1 has a sword. He kills the next person (i.e. No. 2) and gives the sword to the next (i.e. No. 3). All people do the same until only 1 survives. Which number survives at the last?

Q17. Augustus De Morgan, the mathematician, who died in 1871 used to boost that he was x years old in the year x^2. Jasper Jenkins, wishing to improve on this, told me in 1925 that he was $a^2 + b^2$ in $a^4 + b^4$; that he was 2m in the year $2m^2$; and that he was 3n years old in the year $3n^4$. Can you give the years in which De Morgan and Jenkins were respectively born?

Q. 18 Hunger Bites is a restaurant serving three items, burgers, fries, and ice cream. It has two employees Anish and Bani who prepare the items ordered by the clients. Preparation time is 10 minutes for a burger and 2 minutes for an order of Ice cream. An employee can prepare only one of these items at a time. The fries are prepared in an automatic fryer which can prepare up to 3 portions of fries at a time and takes 5 minutes irrespective of the number of portions. The fryer does not need an employee to constantly attend to it, and we can ignore the time taken by an employee to start and stop the fryer; thus, an employee can be engaged in preparing other items while the frying is on. However, fries cannot be prepared in anticipation of future orders. Hunger Bites wishes to serve the orders as early as possible. The individual items in any order are served as and when ready; however, the order is completely served only when all the items of that order are served. The table below gives the orders of three clients and the times at which they placed their orders:

Client no.	Time	Order
1	10:00	1 burger, 3 portions of fries, 1 order of ice cream
2	10:05	2 portions of fries. 1 order of ice cream
3	10:07	1 burger. 1 portion of fries

a. Assume that only one client's order can be processed at any given point of time. So, Anish or Bani cannot start preparing a new order while a previous order is being prepared. At what time is the order placed by Client 1 completely served?

b. Assume that only one client's order can be processed at any given point of time. So, Anish or Bani cannot start preparing a new order while a previous order is being prepared. At what time is the order placed by Client 3 completely served?

c. Suppose the employees are allowed to process multiple orders at a time, but the preference would be to finish orders of clients who placed their orders earlier. At what time is the order placed by Client 2 completely served?

d. Suppose the employees are allowed to process multiple orders at a time, but the preference would be to finish orders of clients who placed their orders earlier. Also assume that the fourth client came in only at 10:35. Between 10:00 and 10:30, for how many minutes is exactly one of the employees idle?