

## Question 1

(Please implement the solution to this question in C.)

Our company intends to start a new rewards program that gives our customers the chance to earn points on their purchases.

Customers on the program are sorted into three tiers- Gold, Silver and Bronze, each with their own scheme for earning points.

For this task you are to implement a module that, given the customer's ID and the amount they have just spent, returns the total number of rewards points earned by the customer historically, including the points earned in the current transaction. The formula for calculating rewards points earned is presented below.

All customers are identifiable by a unique 4 digit, integer ID. Assume all customers already exist in the system and are tied to one of the rewards tiers.

For simplicity, you may assume that a primitive, statically allocated database is used to store the customer details, such as an array. Assume that there is a total of only 5 customers in the system but consider how your solution might be scaled in the future.

Provide an interface to add a customer to the system.

### Rewards scheme

Gold: 3 points earned per dollar spent

Silver: 2 points earned per dollar spent

Bronze: 1 point earned per dollar spent

The maximum amount a customer can spend in one transaction is \$10,000. All rewards points and transaction amounts are integers.

## Question 2

(Please implement the solution to this question in Python 3 or C. If the implementation is in C, your mark is discounted by 20%)

For this task you are to implement a singly linked list.

As part of your implementation, please include:

1. A method for inserting new nodes
2. A method for deleting nodes
3. A method for determining the total number of nodes

Finally, put your linked list into action by using your methods to create a linked list consisting of 10 nodes and then printing out the data from the linked list in reverse order.

