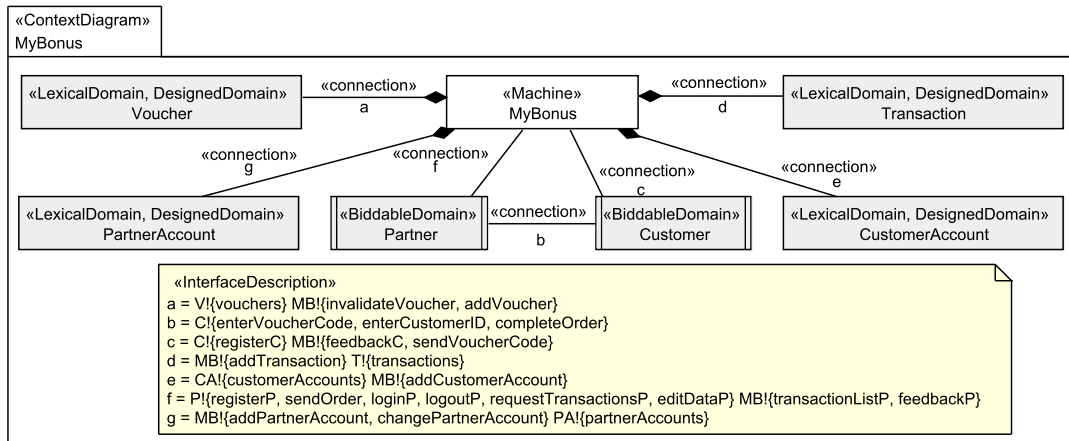


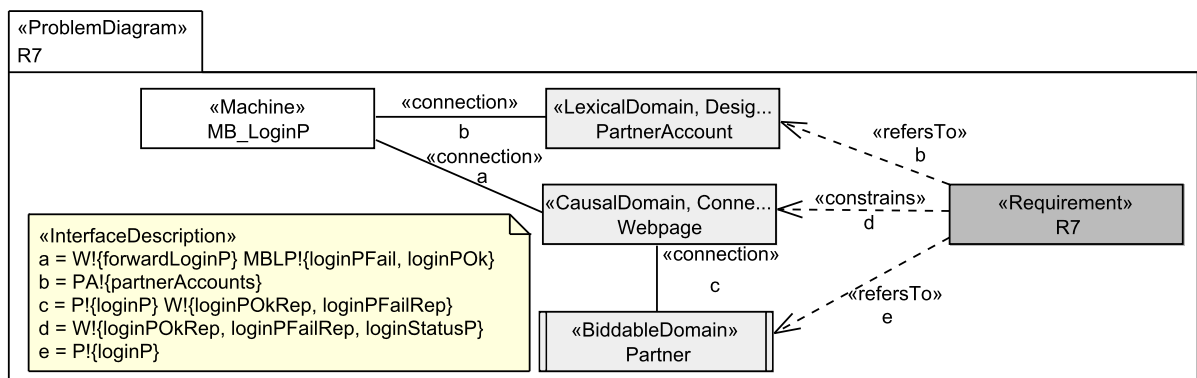
Consider the following context diagram for MyBonus.



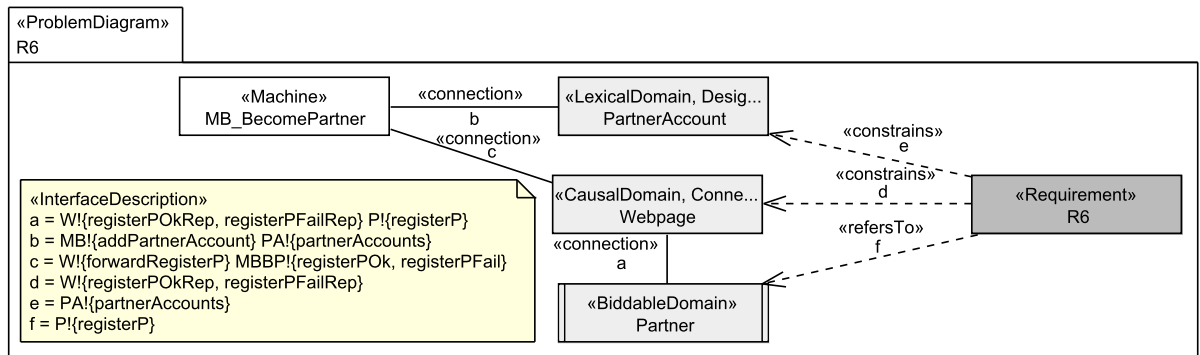
### Exercise 4.1

For each of the following four problem diagrams, state to which problem frame the diagram fits. Explain briefly why you think that the diagram fits to the frame.

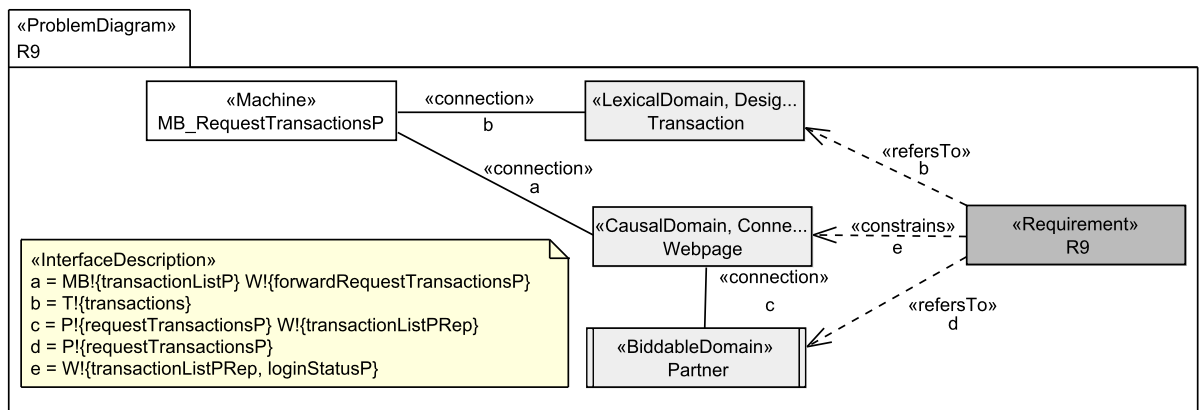
R7 Partners can log in into MyBonus. The partner has to enter his/her partner id and the chosen password. If the combination of partner id and password is valid, the partner is logged-in, otherwise an error message is shown to him/her.



R6 Companies that run a web shop can request to become a partner of My Bonus. To do so, they have to provide the company name, address, web shop address, contact e-mail, a password, and a point quotient between 1 and 500 that represents how many Euro Cents shall be recorded as one MyBonus point if a customer makes an order at the partner. E.g., if the point quotient is 100 and a customer makes an order of 1337 Euro Cent, then 13 MyBonus points are recorded. If the data is completely entered, MyBonus generates a unique partner identification number (partner id) for the new partner.

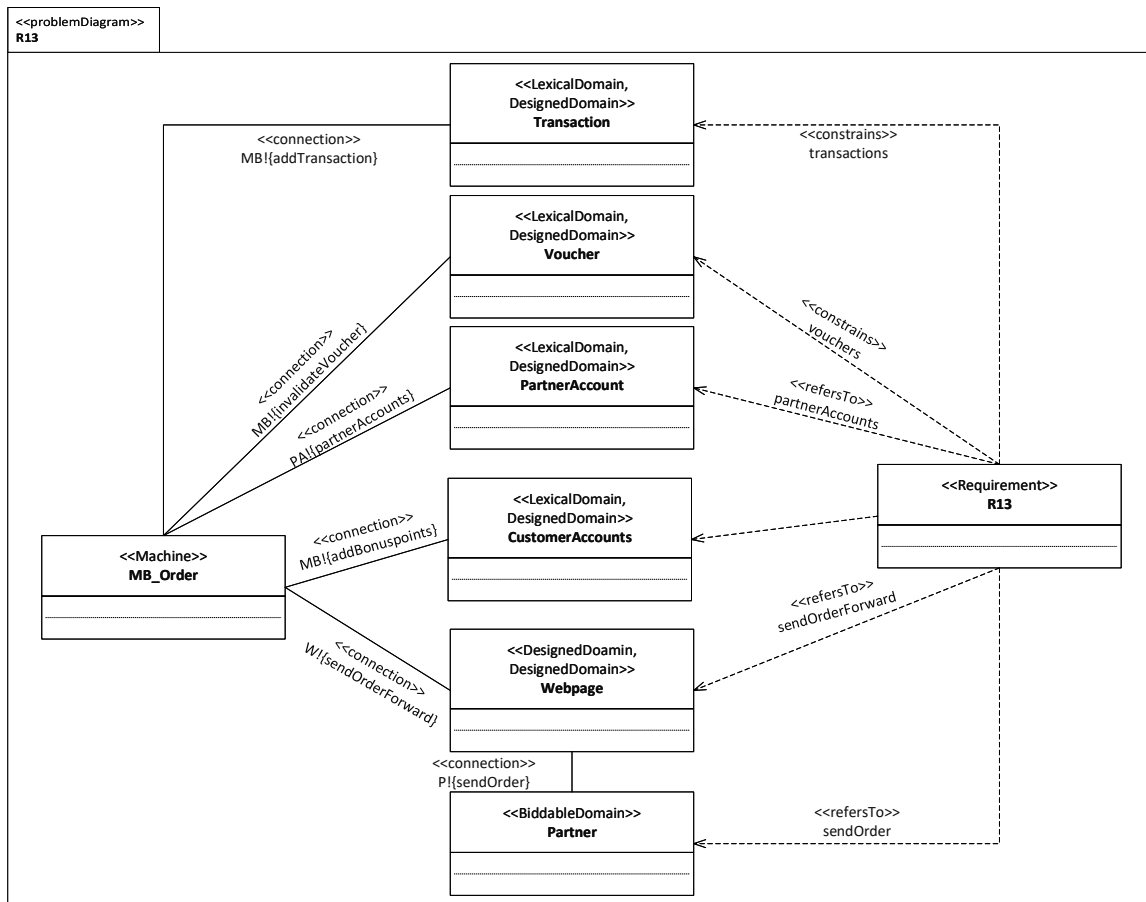


R9 A logged-in partner can request a list of his/her transactions. For the partner, a transaction consists of the date, and the MyBonus points calculated for this transactions.



R13 If partners send the total of an order in Euro Cent, their partner id and password, a customer id, and optionally a voucher code, then the MyBonus points for this transaction are calculated, the transaction is stored, the MyBonus points are recorded for the customer id, and the optionally provided voucher code is invalidated. The MyBonus points are calculated as follows:

$$\frac{\text{total in Euro Cent}}{\text{point quotient of partner}} \times \begin{cases} 2 & \text{if customer entered birthday and phone number} \\ 1 & \text{else} \end{cases}$$



## Exercise 4.2

Use the context diagram and the following two requirements to draw two corresponding problem diagrams by instantiation of problem frames. Describe which frames you instantiated and how the domains in the problem diagrams are related to the domains and interfaces in the context diagram (i.e., describe a corresponding mapping).

R8 A logged-in partner can edit his/her personal data. If no field is left empty, the edited values are stored, otherwise an error message is shown to him/her.

R14 In regular intervals, for every 1000 MyBonus points a customer achieved, a voucher code is generated for the respective customer and sent to his/her known e-mail address. Additionally, the number of MyBonus points stored for these customers is accordingly reduced.