Consider each of the following situations. Which of these situations calls for a data mining approach? What data mining techniques would be appropriate? Make any assumptions that you think are reasonable about the availability of data.

1. Suppose that you are an analyst working for a major bank and you have been given the task of determining 'How should we decide whether to give an applicant a personal loan or not? How would you proceed.

2. A credit card company has decided to stamp out fraud. How could they proceed?

3. RMIT wants to know the numbers of students from other countries in order to do more effective marketing.

4. A major telephone company has noticed that a steady stream of customers is terminating their contracts and suspects that they are going to a competitor. They would like to make sure that no further customers are lost. How can customers who are likely to leave be identified? (Once they are identified they can be given some inducement to stay.) This "churn" situation is a common problem faced by many companies such as banks and airlines.

5. Making a profit in buying and selling shares depends on the future value of the shares. Thus, if one can accurately predict the future value of the shares one can trade profitably. Data for which a new point is available on a regular cycle is called a time series. Share prices form a time series in which there is a new point every day. Can the previous history of a time series be used to predict the value $1, 2...n$ time steps ahead?

6. A professional gambler wants to predict the winners of horse races.

7. A mail order company would like to 'segment' its customers into a number of groups with common characteristics. Each customer is allocated to one segment. Customers in a group should be similar enough so that promotional material can be carefully targetted.

8. A hospital has accumulated many records over the years. They would like to identify people who have a high risk of heart attacks. How could they proceed?

9. A large retailer wands to know the breakdown of sales by state and store in order to do better logistics planning.

10. Acme computers sells computers, parts and software through a web page. As part of a sales transaction Acme would like to have a "People who bought X also bought Y." feature. How could this be implemented to maximize sales?

11. The Australian tax office has been collecting access logs for their web site since 2000. They would like to know whether the data contains any indications of tax fraud. How could they proceed?

12. Suggest other situations from your experience that would benefit from data mining.