Transport Makers™ is a huge company that manufactures vehicles for air, road, rail and water public transport systems. Its products include aeroplanes, buses, trucks, monorails, waterbuses and ferry boats. Different divisions exist to manufacture the vehicles for air, road, rail and water respectively. Although the basic vehicle bodies are made at TM, most other parts are obtained from different factories. The different manufacturing divisions within TM order parts that come from the same factories (for example: trucks, buses, aeroplanes and monorail trains all require tyres; all vehicles have passenger seats). The factories regularly submit lists of stock on hand and item prices to TM, so files can be updated. TM employs thousands of employees in many roles and on many different ranks. Because the items manufactured are physically large and costly, the number of items being manufactured at any one time is in terms of hundreds, not thousands.

TM has a large scale information system, incorporating many applications for various departments. We are concerned with the automated Ordering System application.

TM’s clients are authorities such as municipalities, national and state bodies as well as private transportation companies. An order from a client often comprises vehicles of more than one kind, for example – an airline may order planes, buses and trucks. Clients’ orders are processed in the Ordering department and orders for the various items (i.e. vehicles) are directed to the appropriate manufacturing division/s. Divisions consolidate their orders and, in turn, submit their orders for the necessary parts to the Ordering Department. On a weekly basis this department combines the divisional orders for parts, checks availability of stock and submits orders to the factories. Should a required part/s be unavailable a separate order (called a back order) is sent to the factory, which must then make internal arrangements to provide it. Reports of all orders are submitted to TM’s accountant. When factories deliver parts and an invoice to TM, the Ordering Department processes the order by checking that the order, the invoice, and the parts received all correspond. The check on the parts is automated by scanning barcodes. Finally the department subdivides the parts and distributes them to the divisions, along with an order-received report of which a copy also goes to the accountant.

Although prices of vehicles and parts are recorded with each order, the actual financial aspects of the transactions, such as accounts rendered and payments made, are outside the scope of this ordering application.

The current system is extremely time consuming and cumbersome. The probability that an error can occur with the ordering process is very high especially since the number of applications that are received has increased by 400%. The only way in
which the extra workload can be managed is either to employ extra staff or to computerise some or all parts of the system. The head of the ordering department Mr Fred Fitter is under pressure to keep the budget at its current status. TM’s management is however willing to spend $12 000 in the current year to develop a solution to the current problems.