As Wood Street Academy has grown over the years so has their investment in a wide range of computing devices. Several years ago, the academy decided to create their own computer repairs department called PCRepairs. Initially this was a welcome relief to staff and students (the primary customers) who now had the opportunity to have their desktops and laptops repaired without the need to send them off-campus. However, as the academy became more reliant on these computing devices the more devices had to be repaired in the same amount of time. Additionally, the head of the PCRepairs department had to ensure that the manual system was always kept up to date. Needless to say, this quickly became an incredible burden. Finally, towards the end of 2021 the academy decided that a suitable information system had to be developed to streamline the repairs department.

As such your SysDev team has been asked to develop an information system to solve the problems experienced by the PCRepairs department. After meeting with the head of the PCRepairs department you were able to ascertain that the main function (create, read, update, delete) of the system would be to manage the various repair jobs and to generate reports. Currently, when a customer (student or staff member) brings a desktop/laptop for repairs a paper-based system is used to keep track of which technician worked on that repair job. Once a problem has been diagnosed it is noted on the job card (update repair job) together with any part/s used, if required. If the part is not in stock it is ordered. This is also noted on the job card. Once the repair has been completed (updated accordingly by technician) the system informs the front desk that they may contact the customer to collect their desktop/laptop. At this point in time the front desk is also able to inform the customer as to the total cost of the repair, which consist of the labour cost and the cost of the part/s used (if any).

Although it is important to interpret the provided background information, the head of the PCRepairs department was clear that the new information system should be web-based and provide the following core functionality:

Repair job management:
The system should allow any of the staff members of the PCRepairs department to create a new repair job. This would typically take place when a customer brings in a desktop or laptop for repairs. The relevant information should be captured from the customer, including the customer details, details of the desktop/laptop together with a description of the fault. Importantly, a technician should be allocated to the repair job.

Information management:

Because the current system is paper-based any changes to a customer's details requires a substantial amount of time and is susceptible to mistakes. The same holds for the details of the technicians, repaired computers / laptops, and the parts used in the repairs. As such the new system should facilitate managing this information (i.e. creating, reading, updating or deleting information).

Technician portal:

Here technicians should be able to update the repair jobs that have been created. This includes being able to order parts for the repair job. Once a repair job is complete they should be able to mark it as such and the front desk should be notified. They should also be able to update the details of the computer equipment.

Reporting:

The head of the PCRepairs department would like to create reports to:
- See the parts that have been ordered and which technicians ordered them.
- The status of repair jobs.
- Repair costs as they relate to the repair jobs. For example, being able to create a report that details the labour and parts costs over a specific period for a specific technician.
- Ascertain the total amount of parts on-hand (quantity per part type, for example). The report should also be able to provide the total value of all the parts on-hand and the quantities of each. This will assist the weekly stocktakes that have to take place.
- View the repairs history of computing devices.

Security:

Since it is very easy to make mistakes with the current paper-based system the new system should make use of some form of security. For example, only the head of the department should be able to access all aspects of the system, whereas the front desk may only access a portion thereof.

Customer portal:

To assist customers without having to phone or physically walk to the department, the new system should provide a customer information portal. From this portal it should be possible for customers to,
- Check on the status of their repair job/s.
- Send the relevant technician a message, if so desired.

Core business rules:
- A technician can work on many repair jobs and each repair job can have many technicians work on it.
- A repair job is associated with one desktop/laptop and each desktop/laptop can be repaired many times.
- A customer can have many desktops/laptops, but each desktop/laptop belongs to one customer.
- A customer can request many repair jobs but each repair job is linked to one customer.
- A repair job can utilise zero or many parts but each part goes to a single repair job.
- A technician can order one or many parts but each part is ordered by a single technician.

Assumptions: Assume that your customers are only going to bring in desktops and laptops for repairs.