DESIGN

Choice of software

I have decided to construct the system on Microsoft Access. The software allows easy use and enables data and information to be presented in a clear straight forward way. This is due to a number of features contained within Access. By utilising some of these features, I will be able to construct a system, which is easy to understand as well as being user friendly. Access will allow me to construct tables by which data and information is recorded through the use of forms. This will allow the user to record data with the greatest of ease. There are a number of other key features, which will be used to construct the appointment system. These are as follows;

- Macros: These will allow me to automatically execute an operation at the click of a button.
- Queries: These provide an easy way of asking questions of the database and getting it to produce useful and relevant information to those questions.
- Reports: This is a way of presenting data on the screen or in print format, for example generating a report on the progress of a job.
- Protection: This feature will enable me to protect the system from unauthorised access to data and information stored on the system.
- Data validation: This will help the user to enter the correct information at certain locations.
- Formatting: This will allow the data and information stored in the database to be presented clearly and easily by the user.
- Calculations: This will allow the system to automatically do any calculations, making it easy for the user to use the system.

Therefore by using Microsoft Access software it will enable me to meet all the requirements of the new system, that is, it will allow me to overcome some of the key problems of the old system.

System overview

When the system is opened, the main switchboard will automatically execute. This will give the give the user a number of options, for example adding a new customer. All the user has to do is to select an option and using the mouse click on the assigned button. At all times there is an exit button, along with a number of other options. If the user wishes to return to the main switchboard all they need to is to click the exit button. Depending on where the user wants to go, all they need to do is to select one of the options (see flow chart of the new system).

Input data

The input data is the data that is entering the system (see data flow diagram of new system). This will consists of the following;

- Clients details: Personal information about the client, this includes name, address, telephone number…
- Any basic enquires into making an appointment.
- Appointment details: This is information about the appointment, for example the type of service the client wants. This also includes time of the appointment.

Processing of the input data

The customer's details are stored for future reference. This is in case a client needs to be contacted in an emergency or if their job takes longer than usual. The initial enquiry is used to identify whether the garage carries out that service, as the garage does not offer ever service known. Once a client selects a service, that the garage offers, then certain details will be required. For example the time of the appointment. This is important as a client maybe busy on a day when a slot is available by the garage.

Output data

The output data is the data that is retrieved after the processing. The output data is as follows:

- An appointment for the client.
- The day and time of the appointment for the client. This can be printed out on request.
- The clients details stored on the database for the garages reference.

Normalisation of data

Un-normalised form (0NF)

CLIENT (ClientID, Title, Surname, Forename, Address1, Address2, Adress3, Address4, Telephonenumber)

Repeating data

(Jobnumber, servicetype, MechanicID, Title, Surnamne, Forename, Address1, Address2, Address3, Address4, Homenumber, Mobilenumber, appointmentdate, starttime, finishingtime, cost)

First Normal Form (1NF)

CLIENT (ClientID, Title, Surname, Forename, Address1, Address2, Adress3, Address4, Telephonenumber)

APPOINTMENT (Jobnumber, servicetype, MechanicID, Title, Surnamne, Forename, Address1, Address2, Address3, Address4, Homenumber, Mobilenumber, appointmentdate, starttime, finishingtime, cost)

Second Normal Form (2NF)

CLIENT (ClientID, Title, Surname, Forename, Address1, Address2, Adress3, Address4, Telephonenumber)

MECHANIC (MechanicID, Title, Surnamne, Forename, Address1, Address2, Address3, Address4, Homenumber, Mobilenumber)

APPOINTMENT (Jobnumber, servicetype, MechanicID, ClientID, appointmentdate, starttime, finishingtime, cost)

Third Normal Form (3NF)

CLIENT (ClientID, Title, Surname, Forename, Address1, Address2, Adress3, Address4, Telephonenumber)

MECHANIC (MechanicID, Title, Surnamne, Forename, Address1, Address2, Address3, Address4, Homenumber, Mobilenumber)

SERVICE (servicetype, cost)

APPOINTMENT (Jobnumber, servicetype, MechanicID, ClientID, appointmentdate, starttime, finishingtime, cost)

Security

The appointment system will be protected via the protection feature of Access. There is a password option, which will not be activated once the system is completely constructed. This due to the problem that the password could be forgotten, if it is not written down. However, should the user wish to activate the password, they can do so by going to the ***Tools*** at the top of the screen. The user then selects ***security*** and clicks on the ***set database password*** to activate the password. This will be explained further in the user manual.

Test strategy

The systems test strategy will consist of the following:

- Functional testing: This ensures that the systems macros and all other command buttons are tested under various consequences.
- User testing: This allows the user to experiment with the system to identify any problems which they may encounter and/or if the meets there requirements.
- Data testing: This consists of inputting fictional data into the system to identify any errors that may arise. This also includes checking that all formulas that are used are operating correctly.
- Finally running through the system continuously to identify any anomalies, which need to be corrected.

Data entry and validation

The set settings within the system won't need to be reset or altered by the user. The system will be set up so that as soon as it is installed they can open it and use it straight away. The user really won't need to alter any of the set settings within the system unless they wish to change small minor details, such as colour schemes.

A good part of the system will be data validated. This will help the user when they use the system, as well as making it easy to operate at the same time. Most of the data validation will take place in the forms. For example, fields where text has to be entered will be validated to prevent any numbers being entered.

Customer table

Primary key	Field name	Data type	Description	Field size	Format	Input mask	Default value	Validation rule	Validation text
Yes	CustomerID	Autonumber	Customers ID number	Long integer	General number				
No	Title	Text	Customers title	50	General text		Mr		
No	Surname	Text	Customers surname	50	General text				
No	Forename	Text	Customers first name	50	General text				
No	Address1	Text	Customer address1	50	General text				
No	Address2	Text	Customer address2	50	General text		Ilford		
No	Address3	Text	Customer address3	50	General text		Essex		
No	Addres4	Text	Customer address4	50	General text				
No	Telephone number	Text	Customer telephone number	50	General text				

Mechanic table

Primary key	Field name	Data type	Description	Field size	Format	Input mask	Default value	Validation rule	Validation text
Yes	MechanicID	Autonumber	MechanicID number	Long integer	General number				
No	Title	Text	Mechanic title	50	General text		Mr		
No	Surname	Text	Mechanic surname	50	General text				
No	Forename	Text	Mechanic first name	50	General text				
No	Address1	Text	Mechanic address1	50	General text				
No	Address2	Text	Mechanic address2	50	General text		Ilford		
No	Address3	Text	Mechanic address3	50	General text		Essex		
No	Address4	Text	Mechanic address4	50	General text				
No	Home telephone number	Text	Mechanic telephone number	50	General text				
No	Mobile number	Text	Mechanic mobile number	50	General text				

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Appointment table

Primary key	Field name	Data type	Description	Field size	Format	Input mask	Default value	Validation rule	Validation text
Yes	Jobnumber	Autonumber	Job number	Long integer	General number				
No	CustomerID	Number	Customer Id	Long integer	General number				
No	MechanicID	Number	Mechanic Id	Long integer	General number				
No	Appointmentdate	Date/time	Appointment date		Short date		=Date()		
No	Starttime	Date/time	Start time		Short time				
No	Finishingtime	Date/time	Finishing time		Short time				
No	Servicetype	Text	Type of service	50					

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Service table

Field name	Data type	Description	Field size	Format	Input mask	Default value	Validation rule	Validation text
Servicetype	Text	Type of service						
Cost	Currency	Cost of the service	25	Currency				