10.9.1 Requirement of Form Design

The purpose of a form is to communicate effectively to the user through effective forms design. There are several major requirements of form design—

1. **Identification and wording**: The form title is very important. It must clearly identify its purpose. To avoid confusion, columns and rows should be labeled. Form name or code should be used to identify the form so that it becomes easy to reorder.
2. **Maximum readability and use**: The form should be designed in a way that is easy to use and fill out. It should be intelligible, legible and uncomplicated. It should have ample writing space for inserting data.
3. **Physical factors**: In order to achieve easy reading, the form composition, color, layout and paper stock should be taken into consideration. Numbering of pages is very important when multiple reports need to be generated for the users.
4. **Order of data items**: A logical sequence should be maintained while requesting data from the users. Related data should be placed in adjacent positions. The sequence of data in the form and the source documents should be same.
5. **Ease of data entry**: If the form is used for data entry purpose, it should have field positions indicated under each data column. If numerical values are involved, there should be indication of where decimal points are.
6. **Size and arrangement**: The form should be stored easily and filed. Signature facility should be provided. Important items should be placed in a highlighted position in the form.
7. **Use of instructions**: A form should be accompanied by instructions that clearly shows how it should be used and handled.



CHECK YOUR PROGRESS

Q4. How the captions of a source document should be?

Q5. ———————— is one of the traditional input devices. (Fill in the blank)

Q6. Design the formatted form of “Employee Details”.

10.7 SCREEN DESIGN

Form filling is the most effective method of online data entry. The main objectives of screen display design are simplicity, accuracy and quick data capture or data entry. The screen display design should be simple so that the user can understand easily. The design should be accurate and no unnecessary things should be included. Guidelines should be framed very carefully to design data entry screens.

The below mentioned guidelines will help to design data entry screen—

1. Same format should be used throughout the project.
2. Ample of space should be allowed for the data. If there is too much overcrowd of data, it may cause eye strain.
3. Tutorial or help should be provided for technical terms or procedures.

User access to screen locations should be restricted only where data is entered.Descriptive caption for every field should be provided. The user should be shown where to enter the data and the maximum field size should be mentioned.A sample format must be displayed if the user needs to enter values in a field in a specific manner.Entry stroke for every field is required.Users don’t require to type leading zeroes for numeric fields.Users don’t require to type trailing zeroes for numeric fields that includes decimals.Default values should be displayed so that the operator can press the ENTER key to accept the suggested values.A default value should be used when a field value is constant for successive records or throughout the data entry session.A list of acceptable values for each field should be displayed. Meaningful error messages should be provided for the user.A

way should be provided to leave the data entry screen at any time without entering the current record.Users should be provided with opportunities to confirm the accuracy of data before entering it.Users should be able to move among fields in the form in an efficient and easy manner.The screen form layout design should match the layout of the source document.Users should have the capability to add, change, delete and view records.A method should be provided that allows users to search for specific information.

CRT screen is one of the most popular online data entry devices. CRT screens provide instant visual verification of input data. The operator has the capability to make any changes before the data goes into the system for processing. CRT screen performs as a display screen that has a buffer for data storing. It has a common display screen consisting of 24 rows of 80 characters each or 1920 characters.

There are two methods for entering data into a CRT screen. They are—

1. Manual method: This method uses worksheet which is very similar to a printout chart. Reserved areas are used to block out the data or menu to be displayed. For example, in dBase, if we want to print "COMPUTER" in the 12th row and 12th column, the below command can be used.

   @ 10,10 SAY "COMPUTER"
2. Software utility method: Software utility is used to design the screen layout. It is faster and more efficient than the manual method.

10.8 OUTPUT DESIGN

The most important task of any system is the design of the output. Outputs are the reports that the system produces. It can be produced on the screen, on paper, or in media such as the web. The most visible part of a system is the output.

The objectives of the output design are—

1. The output design should be developed in a way that serves intended purpose and eliminates the production of any unwanted output.

spreadsheets, etc. Forms are the product of input and output design. They are business document consisting of specified data.

There are some useful questions that should be considered while creating the forms such as "who, what, how, where, when". This will help to design effective forms.

WHO	It will help to understand who the actual users are.
WHAT	It will help to understand what will be the purpose of the form, what task will be performed and what information is required.
WHEN	It will help to know when the form will be needed.
WHERE	It will help to know where the users will be using the form.
HOW	It will help to know how many users will be using the form.

The objectives of a good form design are—

- Screen should be kept simple by providing proper sequence, information and clear captions.
- Intended purpose should be met by using appropriate forms.
- Completion of the form with accuracy should be ensured.
- The form should be kept attractive using icons, blinking cursors, inverse videos, etc.
- Navigation should be facilitated.

There are three basic classification of forms based on what a form does in the system. They are—

1. **Action**: This is a very basic type of form that asks the users to do something. E.g. purchase orders.
2. **Memory**: This type of form is a record that stores historical data. It remains in a file and later can be used as a reference. E.g. inventory records.
3. **Report**: This type of form is very helpful in guiding supervisors and other administrators in the activities. It provides the important and necessary data on a project or a job. E.g. sales analysis reports.

Internal outputs

Internal outputs are present inside the system. They are used by end-users and managers. They help in decision making and reporting. Management information produces three types of reports—

1. Detailed reports
   They contain all the information with almost no filtering or restriction generated to assist management planning and control.
2. Summary reports
   They contain trends and potential problems. They are categorized and summarized so that they can be generated for managers who don't want details.
3. Exception reports
   They don't contain detailed data. They contain exceptions and data filtered to some conditions or standards before they are presented to the manager as information.

Media

Different types of media are available to produce reports. Now a days, the most dominant media are paper and electronic media. Paper is the traditional medium. The advantage is that it is relatively easy to use, permanent, highly portable and accessible in most cases. It has several significant drawbacks. Once report is printed, it cannot be changed. It is inflexible. They are expensive and hard to move to very long distance. All the drawbacks in paper are solved in electronic media. The users can easily access them. It is relatively inexpensive, can be modified if needed.

10.9 FORM DESIGN

A form identifies the data that we want to collect. It is a powerful tool that allows entering data into the database, displaying it to review or do modification if required and also printing it for distribution. Various examples of forms are business forms, ATM transaction layout, electronic

2. The output design should be developed in a manner that meets the end user requirements.
3. Appropriate quantity of output should be developed.
4. Output should be formed in appropriate format and it should be directed to the right person.
5. The output should be made available on time for making good decisions.

10.8.1 Basic Principles

The main goal of the output design is to present the information to the users in such a manner so that it can be easily and accurately understood with least effort. The fundamental principles for output design helps to show how outputs are used and the ways in which they can be made simpler so that users can understand them.

Understand Report Usage

While designing reports, the first principle is to understand how they are used. Reports are used for various purposes. In some cases, they are read from cover to cover because all information is needed. In many cases they are used as references to identify specific information. Here, it is critical to sort the items or group them under categories. For example, electronic or web-based reports.

In the design and distribution of reports, the frequency of reports plays an important role. Real-time reports produce accurate data the moment they are produced. For e.g. stock market report. Batch reports produce historical information that may be hours, months or years old. They often provide additional information beyond the reported information.

Manage Information Load

Most managers get lots of information. The goal of a well designed report is to provide the lot of information in such a way that it covers all the important points in a summarized way. In some case, different reports may be produced for the same topic for the same users because the reports are used in different ways.

In western countries, the most important information is produced first in the top left corner of the report. The report should be produced in such a format so that users need not do any modification, resort the report's information, try to find critical information or perform any additional calculations. Report should provide all the important information to the user.

Minimize Bias

The analyst should design a report with minimum bias. The problem with biased report is that it may be produced by the analyst unintentionally. One common way of introducing bias in reports is by displaying list of sorted data. The data that comes first may appear to be more useful than data that comes later in the list. If data are sorted in alphabetical order, entries with letter 'A' are more prominent. There is no easy solution to this problem. Analyst may try to present the information in an order in which information is used. Data may be presented in chronological order where more emphasis is given on older data. Data may also be sorted by numerical values in situations where emphasis is given more on higher or lower numerical values. E.g. Monthly sale report by state.

Challenging design issues may be presented by graphic display and reports. Bias can be introduced by the scale on the axes in the graphs. In most cases, the scale should always start at zero otherwise comparison among values may be misleading. For example, consider Figure11.4, have sales increased very much since 2010. The values in both the charts are same but visual images that the two charts produce is quite different. Figure 11.4a would give an impression of minor changes while Figure 11.4b would give an impression of significant increases. In both charts, sales have increased by 15% over five years and approximately by 3% yearly. Figure 11.4a gives a more accurate picture. Figure 11.4b is biased because the scale starts very close to the lowest value in the graph.



Figure 11.4a: Unbiased Graph starting at 0

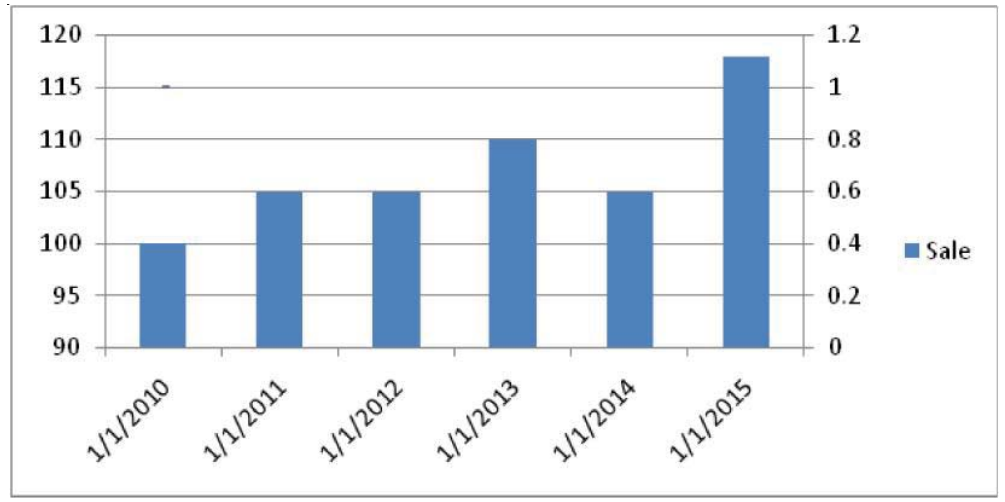


Figure 11.4b: Biased Graph starting at 90

10.8.2 Types of Outputs

The various types of outputs are: external outputs, internal outputs and media.

External outputs

Manufacturers are responsible for creating and designing external outputs for printers. External outputs enable the system to leave the trigger actions for the recipients. They are designed as turnaround outputs. They are implemented as a form.