SRM Institute of Science and Technology

Delhi – Meerut Road, Sikri Kalan, Ghaziabad, Uttar Pradesh – 201204

Department of Computer Applications

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B.Sc. CS 3rd Sem

Office Automation Tool (UCS23G01J)- Lab Manual

Lab 1: Creating, Opening and Basic Formatting in a Word Document

Title

Creating, Opening and Basic Formatting in a Word Document

Aim

To understand the fundamental operations of Microsoft Word, including creating new documents, opening existing ones, and applying basic text formatting.

Procedure

1. **Creating a New Document:**
    - Open Microsoft Word.
    - Go to `File` > `New` > `Blank document` (or press `Ctrl + N`).
2. **Typing and Saving Content:**
    - Type a few sentences of sample text (e.g., "This is my first Word document. I am learning basic formatting.").
    - Go to `File` > `Save As`.
    - Choose a location (e.g., `Documents`).
    - Give the file a name (e.g., `MyFirstDocument.docx`).
    - Click `Save`.
3. **Opening an Existing Document:**
    - Close the current document (File > Close).
    - Go to `File` > `Open`.
    - Browse to the location where you saved `MyFirstDocument.docx`.
    - Select the file and click `Open`.
4. **Applying Basic Formatting:**
    - Select a word or phrase.
    - In the `Home` tab, use the `Font` group:
        - Click `B` for Bold.
        - Click `I` for Italic.
        - Click `U` for Underline.
        - Change the Font Size (e.g., to 14).
        - Change the Font Color (e.g., to blue).
    - Save the changes (`Ctrl + S`).

Source Code

(Not applicable for this type of lab, as it involves GUI interactions. The procedure describes the "source" of actions.)

Input

Sample text: "This is my first Word document. I am learning basic formatting."

Expected Output

A Word document named `MyFirstDocument.docx` containing the sample text, with some words/phrases formatted in bold, italic, underline, different font size, and color.

Lab 2: Modifying Font, Text Alignment, Paragraph Indentation and Bullets and Numbering in a Word Document

Title

Modifying Font, Text Alignment, Paragraph Indentation and Bullets and Numbering in a Word Document

Aim

To gain proficiency in advanced text and paragraph formatting options in Microsoft Word, including font styles, alignment, indentation, and list creation.

Procedure

1. **Open a New Document:**
    - Create a new blank Word document.
2. **Modify Font:**
    - Type three lines of text, e.g.:
        - "Heading 1"
        - "Paragraph one content."
        - "Paragraph two content."
    - Select "Heading 1".
    - In the `Home` tab, `Font` group:
        - Change Font to `Arial Black`.
        - Change Font Size to `18`.
        - Change Font Color to `Red`.
3. **Text Alignment:**
    - Select "Paragraph one content."
    - In the `Home` tab, `Paragraph` group, click `Center` alignment.
    - Select "Paragraph two content."
    - In the `Home` tab, `Paragraph` group, click `Right` alignment.
4. **Paragraph Indentation:**
    - Select "Paragraph one content."
    - In the `Home` tab, `Paragraph` group, click the `Increase Indent` button twice.
    - Select "Paragraph two content."
    - Click the small arrow at the bottom right of the `Paragraph` group to open the `Paragraph Settings` dialog box.
    - Under `Indentation`, set `Left` to `1.5 cm` and `Right` to `1.5 cm`. Click `OK`.
5. **Bullets and Numbering:**
    - Type a list of items, each on a new line, e.g.:
        - "Item A"
        - "Item B"
        - "Item C"
    - Select all three items.
    - In the `Home` tab, `Paragraph` group:
        - Click the `Bullets` dropdown and choose a bullet style (e.g., solid circle).
        - Select the list again.
        - Click the `Numbering` dropdown and choose a numbering style (e.g., 1., 2., 3.).
6. **Save the Document:**
    - Save the document as `AdvancedFormatting.docx`.

Source Code

(Not applicable for this type of lab.)

Input

Sample text: "Heading 1" "Paragraph one content." "Paragraph two content." "Item A" "Item B" "Item C"

Expected Output

A Word document with:

- "Heading 1" in Arial Black, size 18, red.
- "Paragraph one content." centered and indented.
- "Paragraph two content." right-aligned and indented.
- "Item A", "Item B", "Item C" formatted as a bulleted list, then as a numbered list.

Lab 3: Creating an advertisement pamphlet

Title

Creating an Advertisement Pamphlet

Aim

To utilize Word's layout and design features, including text boxes, shapes, and images, to create a visually appealing advertisement pamphlet.

Procedure

1. **Open a New Document:**
    - Create a new blank Word document.
2. **Set Page Orientation (Optional, but good for pamphlets):**
    - Go to `Layout` tab > `Orientation` > `Landscape`.
3. **Insert Text Boxes for Content:**
    - Go to `Insert` tab > `Text Box` > `Draw Text Box`.
    - Draw several text boxes to divide your pamphlet content (e.g., for a headline, body text, contact info).
    - Type sample advertisement text into each text box.
4. **Insert Shapes for Design Elements:**
    - Go to `Insert` tab > `Shapes`.
    - Choose a shape (e.g., a rectangle or a star).
    - Draw the shape on the document.
    - Right-click the shape > `Format Shape` to change fill color, outline, etc.
5. **Insert Images (Placeholder):**
    - Go to `Insert` tab > `Pictures` > `Online Pictures` (or `This Device` if you have local images).
    - Search for a relevant image (e.g., "product image").
    - Insert the image.
    - Select the image, go to `Picture Format` tab > `Wrap Text` > `Square` (or `Tight`) to easily move it around.
6. **Apply WordArt for Headlines:**
    - Go to `Insert` tab > `WordArt`.
    - Choose a WordArt style and type your main headline.
7. **Arrange and Format Elements:**
    - Drag and resize text boxes, shapes, and images to create an appealing layout.
    - Use `Align` and `Group` options in the `Shape Format` or `Picture Format` tab to organize elements.
    - Apply various font styles, sizes, and colors to the text within the text boxes to match the advertisement theme.
8. **Save the Document:**
    - Save the document as `AdvertisementPamphlet.docx`.

Source Code

(Not applicable for this type of lab.)

Input

Conceptual content for an advertisement (e.g., a new product launch, a service promotion).

Expected Output

A multi-element Word document resembling an advertisement pamphlet, incorporating text boxes, shapes, images (placeholders), and WordArt, with a visually organized layout.

Lab 4: Inserting Header and Footer to the document & Creating Page Breaks

Title

Inserting Header and Footer to the Document & Creating Page Breaks

Aim

To learn how to add consistent information at the top and bottom of each page using headers and footers, and how to control document flow with page breaks in Microsoft Word.

Procedure

1. **Open a New Document:**
    - Create a new blank Word document.
2. **Insert Header:**
    - Go to `Insert` tab > `Header` > Choose a built-in header style (e.g., `Blank`).
    - Type some text in the header (e.g., "Lab Manual - Office Automation").
    - Double-click outside the header area or press `Esc` to exit header/footer mode.
3. **Insert Footer:**
    - Go to `Insert` tab > `Footer` > Choose a built-in footer style (e.g., `Blank`).
    - Type some text in the footer (e.g., "Page [Your Name]").
    - To insert page numbers: In the `Header & Footer` tab (appears when header/footer is active), go to `Page Number` > `Current Position` > Choose a style.
    - Double-click outside the footer area or press `Esc` to exit header/footer mode.
4. **Add Content and Observe:**
    - Type several paragraphs of text to fill at least two pages. Observe how the header and footer appear on both pages.
5. **Create Page Breaks:**
    - Place your cursor at the end of the first page's content where you want the next section to start on a new page.
    - Go to `Layout` tab > `Breaks` > `Page`.
    - Observe that the text after your cursor moves to the beginning of the next page.
    - Alternatively, press `Ctrl + Enter` to insert a page break.
6. **Save the Document:**
    - Save the document as `HeaderFooterBreaks.docx`.

Source Code

(Not applicable for this type of lab.)

Input

Several paragraphs of placeholder text to span multiple pages.

Expected Output

A multi-page Word document where:

- Each page has a consistent header (e.g., "Lab Manual - Office Automation").
- Each page has a consistent footer (e.g., "Page [Your Name]" and a page number).
- Content is explicitly moved to a new page using page breaks.

Lab 5: Create an Employee Salary Slip Table using Table Setting and Border Options

Title

Creating an Employee Salary Slip Table using Table Setting and Border Options

Aim

To master table creation and formatting in Microsoft Word, specifically focusing on designing a structured employee salary slip with custom borders.

Procedure

1. **Open a New Document:**
    - Create a new blank Word document.
2. **Insert a Table:**
    - Go to `Insert` tab > `Table`.
    - Hover over the grid to select the desired number of rows and columns (e.g., 5 columns x 10 rows for a basic slip).
3. **Enter Data:**
    - Populate the table with typical salary slip information. Example columns:
        - `Earnings` | `Amount (₹)` | `Deductions` | `Amount (₹)` | `Net Pay`
        - `Basic Salary` | `XXXXX` | `PF` | `XXXX` |
        - `HRA` | `XXXX` | `TDS` | `XXXX` |
        - `Conveyance` | `XXXX` | | |
        - `Gross Pay` | `XXXXX` | `Total Deductions` | `XXXX` | `XXXXX` (Net Pay)
4. **Merge Cells (Optional, for headers/titles):**
    - Select cells you want to merge (e.g., for a "Salary Slip" title row).
    - Right-click > `Merge Cells`.
5. **Adjust Column Widths:**
    - Hover over column borders until the double-headed arrow appears, then drag to resize.
    - Alternatively, select the table, go to `Table Layout` tab > `AutoFit` > `AutoFit Contents` or `Fixed Column Width`.
6. **Apply Borders and Shading:**
    - Select the entire table or specific cells/rows.
    - Go to `Table Design` tab > `Borders` dropdown.
    - Choose `Borders and Shading...`.
    - In the dialog box:
        - Under `Borders` tab:
            - Select `All` or `Grid`.
            - Choose `Style` (e.g., double line for outer border, single line for inner).
            - Choose `Color` and `Width`.
        - Under `Shading` tab:
            - Choose a `Fill` color for header rows or specific cells.
    - Click `OK`.
7. **Save the Document:**
    - Save the document as `EmployeeSalarySlip.docx`.

Source Code

(Not applicable for this type of lab.)

Input

Conceptual employee salary details (e.g., Basic Salary, HRA, PF, TDS).

Expected Output

A Word document containing a well-structured table representing an employee salary slip, with customized borders and possibly shading for readability.

Lab 6: Create your class time table

Title

Creating Your Class Time Table

Aim

To apply table creation and formatting skills to design a personal class timetable in Microsoft Word, demonstrating organization and clear presentation.

Procedure

1. **Open a New Document:**
    - Create a new blank Word document.
2. **Insert a Table:**
    - Go to `Insert` tab > `Table`.
    - Determine the number of rows (e.g., 7 for days of the week + header) and columns (e.g., 6 for time slots + header).
    - Insert a table with appropriate dimensions (e.g., 7 rows x 6 columns).
3. **Enter Data (Time Table Content):**
    - **First Row (Header):** `Time / Day`, `9:00-10:00`, `10:00-11:00`, `11:00-12:00`, `12:00-1:00`, `1:00-2:00`
    - **First Column (Days):** `Monday`, `Tuesday`, `Wednesday`, `Thursday`, `Friday`, `Saturday`
    - Fill in the remaining cells with your subjects/classes for each time slot.
4. **Format Table for Readability:**
    - **Bold Headers:** Select the first row and first column, then apply bold formatting.
    - **Center Content:** Select all cells containing time/subject names and center align them.
    - **Adjust Column Widths:** Drag column borders to make sure all content fits.
    - **Apply Table Styles (Optional):** Select the table, go to `Table Design` tab, and choose a pre-defined `Table Style` for quick formatting.
5. **Add Borders (Optional, if not using Table Style):**
    - Select the entire table.
    - Go to `Table Design` tab > `Borders` dropdown > `All Borders`.
6. **Add a Title:**
    - Above the table, type "My Class Time Table" and format it as a heading (e.g., Font Size 20, Bold, Centered).
7. **Save the Document:**
    - Save the document as `MyClassTimeTable.docx`.

Source Code

(Not applicable for this type of lab.)

Input

Your actual or hypothetical class schedule.

Expected Output

A Word document displaying a clear and organized class timetable in a table format, with appropriate headers and formatting.

Lab 7: Prepare a Payslip for an Employee with Basic Formulas

Title

Preparing a Payslip for an Employee with Basic Formulas (in Excel)

Aim

To create an employee payslip in Microsoft Excel, demonstrating the use of basic formulas for calculations like Gross Pay, Deductions, and Net Pay.

Procedure

1. **Open a New Workbook:**
   - Open Microsoft Excel and create a new blank workbook.
2. **Set up Payslip Structure:**
   - In Cell `A1`, type `Employee Payslip`.
   - In `A3`, type `Employee Name:`. In `B3`, type `[Your Name]`.
   - In `A4`, type `Employee ID:`. In `B4`, type `[Your ID]`.
   - In `A6`, type `Earnings`. In `B6`, type `Amount`.
   - In `A7`, type `Basic Salary`. In `B7`, enter a value (e.g., `25000`).
   - In `A8`, type `House Rent Allowance (HRA)`. In `B8`, enter a formula (e.g., `=B7*0.15` for 15% of Basic).
   - In `A9`, type `Conveyance Allowance`. In `B9`, enter a value (e.g., `1200`).
   - In `A10`, type `Gross Pay`. In `B10`, enter the sum formula (e.g., `=SUM(B7:B9)`).
   - In `D6`, type `Deductions`. In `E6`, type `Amount`.
   - In `D7`, type `Provident Fund (PF)`. In `E7`, enter a formula (e.g., `=B7*0.12` for 12% of Basic).
   - In `D8`, type `Professional Tax`. In `E8`, enter a value (e.g., `200`).
   - In `D9`, type `Total Deductions`. In `E9`, enter the sum formula (e.g., `=SUM(E7:E8)`).
   - In `A12`, type `Net Pay`. In `B12`, enter the formula `=B10-E9`.
3. **Format Cells:**
   - Select the `Amount` columns (`B` and `E`).
   - Right-click > `Format Cells` > `Number` tab > `Currency` > Select ₹ symbol and 2 decimal places.
   - Bold the headers (`A6:B6`, `D6:E6`, `A10`, `D9`, `A12`).
4. **Add Borders:**
   - Select the entire payslip area (e.g., `A1:E12`).
   - In the `Home` tab, `Font` group, click the `Borders` dropdown and choose `All Borders`.
5. **Save the Workbook:**
   - Save the workbook as `EmployeePayslip.xlsx`.

Source Code

(Not applicable for this type of lab, as it involves Excel formulas and GUI interactions. The formulas are provided in the procedure.)

Input

Basic Salary: 25000 HRA: 15% of Basic PF: 12% of Basic Conveyance Allowance: 1200 Professional Tax: 200

Expected Output

An Excel worksheet displaying an employee payslip with:

- Calculated HRA, Gross Pay, Total Deductions, and Net Pay based on the entered formulas.
- All monetary values formatted as currency.
- Clear borders for the payslip structure.

Lab 8: Chart Types

Title

Understanding and Creating Various Chart Types (in Excel)

Aim

To explore different chart types available in Microsoft Excel and understand when to use each type to effectively visualize data.

Procedure

1. **Open a New Workbook:**
   - Open Microsoft Excel and create a new blank workbook.
2. **Enter Sample Data:**
   - **Data Set 1 (Sales Data for Bar/Column Chart):**
     - `A1: Product` | `B1: Sales Q1` | `C1: Sales Q2`
     - `A2: Product A` | `B2: 150` | `C2: 180`
     - `A3: Product B` | `B3: 200` | `C3: 220`
     - `A4: Product C` | `B4: 120` | `C4: 130`
   - **Data Set 2 (Market Share for Pie Chart):**
     - `E1: Category` | `F1: Percentage`
     - `E2: Electronics` | `F2: 30%`
     - `E3: Apparel` | `F3: 25%`
     - `E4: Home Goods` | `F4: 20%`
     - `E5: Others` | `F5: 25%`
   - **Data Set 3 (Trend Data for Line Chart):**
     - `H1: Month` | `I1: Revenue`
     - `H2: Jan` | `I2: 10000`
     - `H3: Feb` | `I3: 12000`
     - `H4: Mar` | `I4: 11000`
     - `H5: Apr` | `I5: 13500`
3. **Create a Column Chart:**
   - Select `Data Set 1` (`A1:C4`).
   - Go to `Insert` tab > `Charts` group > Click `Insert Column or Bar Chart` > Choose `Clustered Column`.
   - Move the chart to a suitable location.
4. **Create a Pie Chart:**
   - Select `Data Set 2` (`E1:F5`).
   - Go to `Insert` tab > `Charts` group > Click `Insert Pie or Doughnut Chart` > Choose `2-D Pie`.
   - Move the chart and add `Data Labels` (Right-click chart > `Add Data Labels`).
5. **Create a Line Chart:**
   - Select `Data Set 3` (`H1:I5`).
   - Go to `Insert` tab > `Charts` group > Click `Insert Line or Area Chart` > Choose `2-D Line`.
   - Move the chart.
6. **Customize Charts (Optional):**
   - Select a chart. `Chart Design` and `Format` tabs will appear.
   - Change `Chart Title`, `Axis Titles`, `Colors`, `Layouts`.
7. **Save the Workbook:**

- Save the workbook as `ChartTypes.xlsx`.

Source Code

(Not applicable for this type of lab.)

Input

The sample data sets provided in the procedure.

Expected Output

An Excel worksheet containing three different charts:

- A Column Chart visualizing Product Sales.
- A Pie Chart showing Market Share distribution.
- A Line Chart depicting Revenue trends over months.

Lab 9: Number conversion in excel

Title

Number Conversion in Excel

Aim

To learn how to perform various number conversions (e.g., decimal to binary, binary to decimal, decimal to hexadecimal) using Excel's built-in functions.

Procedure

1. **Open a New Workbook:**
   - Open Microsoft Excel and create a new blank workbook.
2. **Set up Conversion Table:**
   - In `A1`, type `Decimal`. In `B1`, type `Binary`. In `C1`, type `Hexadecimal`.
   - In `A2`, enter a decimal number (e.g., `10`).
   - In `A3`, enter another decimal number (e.g., `255`).
   - In `A4`, enter another decimal number (e.g., `42`).
3. **Decimal to Binary Conversion:**
   - In `B2`, enter the formula `=DEC2BIN(A2)`.
   - Drag the fill handle down to `B4` to apply the formula to other cells.
4. **Decimal to Hexadecimal Conversion:**
   - In `C2`, enter the formula `=DEC2HEX(A2)`.
   - Drag the fill handle down to `C4` to apply the formula to other cells.
5. **Binary to Decimal Conversion:**
   - In `E1`, type `Binary`. In `F1`, type `Decimal`.
   - In `E2`, enter a binary number (e.g., `1010`).
   - In `E3`, enter another binary number (e.g., `11111111`).
   - In `F2`, enter the formula `=BIN2DEC(E2)`.
   - Drag the fill handle down to `F3`.
6. **Hexadecimal to Decimal Conversion:**
   - In `H1`, type `Hexadecimal`. In `I1`, type `Decimal`.
   - In `H2`, enter a hexadecimal number (e.g., `A`).
   - In `H3`, enter another hexadecimal number (e.g., `FF`).
   - In `I2`, enter the formula `=HEX2DEC(H2)`.
   - Drag the fill handle down to `I3`.
7. **Save the Workbook:**
   - Save the workbook as `NumberConversions.xlsx`.

Source Code

(Not applicable for this type of lab, as it involves Excel functions. The formulas are provided in the procedure.)

Input

Decimal numbers: 10, 255, 42 Binary numbers: 1010, 11111111 Hexadecimal numbers: A, FF

Expected Output

An Excel worksheet showing:

- Decimal numbers converted to their binary and hexadecimal equivalents.
- Binary numbers converted to their decimal equivalents.
- Hexadecimal numbers converted to their decimal equivalents.

Lab 10: Working with Functions & Pivot Table, Pivot Charts

Title

Working with Functions & Pivot Table, Pivot Charts (in Excel)

Aim

To understand and apply common Excel functions, and to effectively use PivotTables and PivotCharts for data summarization and analysis.

Procedure

1. **Open a New Workbook:**
   - Open Microsoft Excel and create a new blank workbook.
2. **Enter Sample Data (Sales Data):**
   - Create a table with the following headers and data from `A1` to `D10`:
     - `Date | Region | Product | Sales`
     - `01-Jan-2023 | North | Laptop | 1200`
     - `05-Jan-2023 | South | Mouse | 50`
     - `10-Jan-2023 | North | Keyboard | 75`
     - `15-Jan-2023 | East | Laptop | 1500`
     - `20-Jan-2023 | West | Mouse | 60`
     - `25-Jan-2023 | North | Laptop | 1100`
     - `01-Feb-2023 | South | Keyboard | 80`
     - `05-Feb-2023 | East | Mouse | 55`
     - `10-Feb-2023 | West | Laptop | 1300`
3. **Working with Functions:**
   - In `F1`, type `Total Sales`. In `G1`, enter `=SUM(D2:D10)`.
   - In `F2`, type `Average Sales`. In `G2`, enter `=AVERAGE(D2:D10)`.
   - In `F3`, type `Max Sales`. In `G3`, enter `=MAX(D2:D10)`.
   - In `F4`, type `Min Sales`. In `G4`, enter `=MIN(D2:D10)`.
   - In `F5`, type `Count of Sales`. In `G5`, enter `=COUNT(D2:D10)`.
   - In `F6`, type `Sales in North Region`. In `G6`, enter `=SUMIF(B2:B10,"North",D2:D10)`.
4. **Create a PivotTable:**
   - Select the entire data range (`A1:D10`).
   - Go to `Insert` tab > `Tables` group > Click `PivotTable`.
   - Choose `New Worksheet` and click `OK`.
   - In the `PivotTable Fields` pane:
     - Drag `Region` to `Rows`.
     - Drag `Product` to `Columns`.
     - Drag `Sales` to `Values`.
   - Observe the summarized sales data by Region and Product.
5. **Create a PivotChart:**
   - With the PivotTable selected (or any cell within it), go to `PivotTable Analyze` tab (or `Analyze` tab for older versions) > `Tools` group > Click `PivotChart`.
   - Choose a chart type (e.g., `Clustered Column`) and click `OK`.
   - Observe how the chart dynamically updates with the PivotTable data.
6. **Save the Workbook:**
   - Save the workbook as `FunctionsPivot.xlsx`.

Source Code

(Not applicable for this type of lab, as it involves Excel functions and features. The formulas are provided in the procedure.)

Input

The sample sales data provided in the procedure.

Expected Output

An Excel workbook containing:

- A sheet with the raw sales data.
- Calculations using various Excel functions (SUM, AVERAGE, MAX, MIN, COUNT, SUMIF).
- A new sheet with a PivotTable summarizing sales by Region and Product.
- A PivotChart visualizing the PivotTable data.

Lab 11: Data Validation & Consolidate

Title

Data Validation & Consolidate (in Excel)

Aim

To implement data validation rules to ensure data integrity and to use the Consolidate feature to combine data from multiple ranges into a single summary.

Procedure

1. **Open a New Workbook:**
    - Open Microsoft Excel and create a new blank workbook.
2. **Data Validation (Sheet1):**
    - Rename `Sheet1` to `Data Entry`.
    - In `A1`, type `Score`.
    - Select cell `A2`.
    - Go to `Data` tab > `Data Tools` group > Click `Data Validation`.
    - In the `Settings` tab:
        - `Allow: Whole number`
        - `Data: between`
        - `Minimum: 0`
        - `Maximum: 100`
    - In the `Input Message` tab:
        - `Title: Enter Score`
        - `Input message: Please enter a score between 0 and 100.`
    - In the `Error Alert` tab:
        - `Style: Stop`
        - `Title: Invalid Score`
        - `Error message: Score must be between 0 and 100.`
    - Click `OK`.
    - Test by entering `50` (valid) and `101` (invalid) in cell `A2`.
3. **Consolidate (Multiple Sheets):**
    - **Sheet2 (Branch A Sales):** Rename `Sheet2` to `BranchA`.
        - `A1: Product | B1: Sales`
        - `A2: Laptop | B2: 100`
        - `A3: Mouse | B3: 50`
        - `A4: Keyboard | B4: 75`
    - **Sheet3 (Branch B Sales):** Rename `Sheet3` to `BranchB`.
        - `A1: Product | B1: Sales`
        - `A2: Laptop | B2: 120`
        - `A3: Monitor | B3: 80`
        - `A4: Keyboard | B4: 60`
    - **Sheet4 (Consolidated Sales):** Rename `Sheet4` to `Consolidated`.
    - Go to `Consolidated` sheet, select cell `A1`.
    - Go to `Data` tab > `Data Tools` group > Click `Consolidate`.
    - In the `Consolidate` dialog box:
        - `Function: Sum`
        - `Reference:` Click the collapse dialog button, go to `BranchA` sheet, select `A1:B4`, click expand dialog button, then click `Add`.
        - `Reference:` Click the collapse dialog button, go to `BranchB` sheet, select `A1:B4`, click expand dialog button, then click `Add`.

        - Check `Top row` and `Left column`.
        - Click `OK`.
    - Observe the consolidated sales data.
4. **Save the Workbook:**
    - Save the workbook as `DataValidationConsolidate.xlsx`.

Source Code

(Not applicable for this type of lab, as it involves Excel features and GUI interactions.)

Input

- Data for validation: A score (e.g., 50, 101).
- Sales data for consolidation on `BranchA` and `BranchB` sheets as specified in the procedure.

Expected Output

An Excel workbook with:

- A `Data Entry` sheet where cell `A2` enforces a score between 0 and 100 using data validation.
- `BranchA` and `BranchB` sheets with individual sales data.
- A `Consolidated` sheet showing the summed sales for each product from both branches.

Lab 12: Sorting table in excel

Title

Sorting Table in Excel

Aim

To learn how to sort data within an Excel table based on one or more criteria, in ascending or descending order.

Procedure

1. **Open a New Workbook:**
   - Open Microsoft Excel and create a new blank workbook.
2. **Enter Sample Data:**
   - Create a table with the following headers and data from `A1` to `C7`:
     - `Employee Name | Department | Salary`
     - `John Doe | Sales | 50000`
     - `Jane Smith | Marketing | 60000`
     - `Peter Jones | Sales | 55000`
     - `Alice Brown | HR | 45000`
     - `Bob White | Marketing | 62000`
     - `Charlie Green | HR | 48000`
3. **Sort by a Single Column:**
   - Select any cell within your data range (e.g., `A1`).
   - Go to `Data` tab > `Sort & Filter` group.
   - Click `Sort A to Z` (for ascending by `Employee Name`) or `Sort Z to A` (for descending).
   - Alternatively, click the `Sort` button to open the `Sort` dialog box.
     - `Sort by: Employee Name`
     - `Sort On: Values`
     - `Order: A to Z`
     - Click `OK`.
4. **Sort by Multiple Columns (Custom Sort):**
   - Select any cell within your data range.
   - Go to `Data` tab > `Sort & Filter` group > Click `Sort`.
   - In the `Sort` dialog box:
     - Ensure `My data has headers` is checked.
     - `Sort by: Department`, `Sort On: Values`, `Order: A to Z`.
     - Click `Add Level`.
     - `Then by: Salary`, `Sort On: Values`, `Order: Largest to Smallest`.
     - Click `OK`.
   - Observe that the data is first sorted by Department (alphabetically), and then within each department, by Salary (highest to lowest).
5. **Save the Workbook:**
   - Save the workbook as `ExcelSorting.xlsx`.

Source Code

(Not applicable for this type of lab, as it involves Excel features and GUI interactions.)

Input

The sample employee data provided in the procedure.

Expected Output

An Excel worksheet with the employee data sorted first by `Employee Name` in ascending order, and then by `Department` in ascending order, followed by `Salary` in descending order.

Lab 13: Create a database with MsAccess

Title

Creating a Database with MS Access

Aim

To understand the basics of Microsoft Access by creating a new database file and defining its fundamental properties.

Procedure

1. **Open Microsoft Access:**
    - Launch Microsoft Access.
2. **Create a New Blank Database:**
    - On the Access startup screen, select `Blank desktop database`.
    - In the right pane, provide a `File Name` (e.g., `MyFirstDatabase.accdb`).
    - Choose a location to save the database.
    - Click `Create`.
3. **Observe the Interface:**
    - Access will open with a new, empty table (`Table1`) in `Datasheet View`. This is where you'll enter data.
    - On the left, you'll see the `Navigation Pane`, which lists all objects (tables, queries, forms, reports) in your database.
    - At the top, you'll see the `Ribbon` with various tabs.
4. **Close the Default Table (Optional):**
    - Right-click on the `Table1` tab and choose `Close`. You will be prompted to save it; click `No` for now.
5. **Save the Database:**
    - The database file is already saved at the location you specified in step 2.
    - You can verify this by going to `File` > `Open` and browsing to your saved file.

Source Code

(Not applicable for this type of lab, as it involves MS Access GUI interactions.)

Input

A desired file name for the database (e.g., `MyFirstDatabase`).

Expected Output

A new Microsoft Access database file (`.accdb`) created at the specified location, ready for table creation.

Lab 14: Create a table with sample design and report generation

Title

Creating a Table with Sample Design and Report Generation (in MS Access)

Aim

To design a table in Microsoft Access, define its fields and data types, populate it with sample data, and then generate a basic report based on that table.

Procedure

1. **Open the Database:**
   - Open the `MyFirstDatabase.accdb` created in Lab 13.
2. **Create a New Table in Design View:**
   - Go to `Create` tab > `Tables` group > Click `Table Design`.
   - Define the following fields:
     - `Field Name`: `StudentID`, `Data Type`: `AutoNumber`, `Primary Key`: Yes (click the `Primary Key` button in the `Design` tab).
     - `Field Name`: `StudentName`, `Data Type`: `Short Text`, `Field Size`: `50`
     - `Field Name`: `Course`, `Data Type`: `Short Text`, `Field Size`: `50`
     - `Field Name`: `Grade`, `Data Type`: `Short Text`, `Field Size`: `2`
   - Save the table (Ctrl + S) as `Students`.
3. **Enter Sample Data:**
   - Double-click the `Students` table in the `Navigation Pane` to open it in `Datasheet View`.
   - Enter the following data (StudentID will auto-generate):
     - `StudentName`: `Alice`, `Course`: `Math`, `Grade`: `A`
     - `StudentName`: `Bob`, `Course`: `Science`, `Grade`: `B`
     - `StudentName`: `Charlie`, `Course`: `Math`, `Grade`: `C`
     - `StudentName`: `Diana`, `Course`: `Science`, `Grade`: `A`
4. **Generate a Report:**
   - Select the `Students` table in the `Navigation Pane`.
   - Go to `Create` tab > `Reports` group > Click `Report Wizard`.
   - In the `Report Wizard`:
     - `Tables/Queries`: Select `Table: Students`.
     - `Available Fields`: Click `>>` to move all fields to `Selected Fields`. Click `Next`.
     - `Do you want to add any grouping levels?`: Click `Next` (no grouping for now).
     - `What sort order and summary information do you want for details records?`: Select `StudentName` and `Ascending`. Click `Next`.
     - `What layout would you like for your report?`: Choose `Tabular` and `Portrait`. Click `Next`.
     - `What style would you like?`: Choose any style (e.g., `Office`). Click `Next`.
     - `What title do you want for your report?`: Type `Student Grades Report`.
     - Select `Preview the report`. Click `Finish`.
   - Observe the generated report.
5. **Save the Database:**

- Access automatically saves changes to tables and new objects.

Source Code

(Not applicable for this type of lab, as it involves MS Access GUI interactions.)

Input

- Table design specifications (field names, data types).
- Sample student data.

Expected Output

A Microsoft Access database (`MyFirstDatabase.accdb`) containing:

- A table named `Students` with `StudentID`, `StudentName`, `Course`, and `Grade` fields, populated with the sample data.
- A report named `Student Grades Report` displaying the data from the `Students` table.

Lab 15: Export data from ms access to excel

Title

Exporting Data from MS Access to Excel

Aim

To learn how to export data from an existing table in a Microsoft Access database to a Microsoft Excel spreadsheet.

Procedure

1. **Open the Database:**
   - Open the `MyFirstDatabase.accdb` created in Lab 13 and 14.
2. **Select the Table to Export:**
   - In the `Navigation Pane`, select the `Students` table.
3. **Start the Export Process:**
   - Go to `External Data` tab > `Export` group > Click `Excel`.
4. **Specify Export Options:**
   - In the `Export - Excel Spreadsheet` dialog box:
     - `File name:` Click `Browse` to choose a location and provide a file name (e.g., `StudentsData.xlsx`).
     - `File Format:` Ensure `Excel Workbook (*.xlsx)` is selected.
     - `Export data with formatting and layout`: Keep this checked to retain Access formatting (optional).
     - `Open the destination file after the export operation is complete`: Check this box to automatically open the Excel file after export.
   - Click `OK`.
5. **Save Export Steps (Optional):**
   - If you plan to repeat this export, you can check `Save export steps` and give it a name. Click `Close`.
6. **Verify Export:**
   - The Excel file (`StudentsData.xlsx`) should open automatically. Verify that the `Students` table data is correctly displayed in the Excel spreadsheet.
7. **Save the Database (Access):**
   - Access automatically saves changes.

Source Code

(Not applicable for this type of lab, as it involves MS Access GUI interactions.)

Input

The `Students` table within `MyFirstDatabase.accdb`.

Expected Output

A new Microsoft Excel file (`StudentsData.xlsx`) containing all the data from the `Students` table in the Access database, opened and displayed in Excel.