INFORMATION AND COMMUNICATION TECHNOLOGY PRACTICAL MANUAL

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Instruction for creating practical copy

- Write in only one side of A4 size page

- Do not write more than one experiment in a single page

- Write name of the experiment

- Write date of experiment

Exercises on binary number system

Convert binary number to decimal number

$(1001)_2 = (1*2^3 + 0*2^2 + 0*2^1 + 1*2^0)$

$\quad = (9)_{10}$

Convert decimal number to binary number

	Integer Quotient		Remainder	Coefficient
$41/2 =$	20	+	$\frac{1}{2}$	$a_0 = 1$
$20/2 =$	10	+	0	$a_1 = 0$
$10/2 =$	5	+	0	$a_2 = 0$
$5/2 =$	2	+	$\frac{1}{2}$	$a_3 = 1$
$2/2 =$	1	+	0	$a_4 = 0$
$1/2 =$	0	+	$\frac{1}{2}$	$a_5 = 1$

Therefore, the answer is $(41)_{10} = (a_5 a_4 a_3 a_2 a_1 a_0)_2 = (101001)_2$.

Taken from Morris Mano Digital Design

Find summation of two numbers

		Sum	Carry
0	0	0	0
1	0	1	0
0	1	1	0
1	1	0	1

Example

```
  110011
+100100
--------
 1010111
```

1's complements (Replace all 1 by 0 and all 0 by 1)

Example   10001->01110

2's complements (Add 1 with 1's complements of the number)

Example   10001->01111

Subtraction using complements

Minuend – subtrahend = difference
Algorithm

- Take 2's complements of the subtrahend
- Add with minuend
- If end carry generates discard it
- If no end carry generates take 2's complement of the result and put a minus sign before it.

Example
100001-110001=?
2's complements of 110001 is 001111
100001+001111=110000(No end carry)
2's complements of 110000=010000
Difference= -010000

Algorithm

Write an algorithm to determine given number is prime or not

Input:-Number

Output:-Yes if the number is prime no otherwise

Primechecker(n)
1. K=0
2. for i=1 to n
3.   if(n%i==0)
4.   k=k+1
5. if(k=2)
6.   print(n is prime number)
7. else
8.   print(n is not prime)

Write an algorithm of merge sort

MERGE-SORT(A, p, r)

1   **if** $p < r$
2       $q = \lfloor (p + r)/2 \rfloor$
3   MERGE-SORT(A, p, q)
4   MERGE-SORT$(A, q + 1, r)$
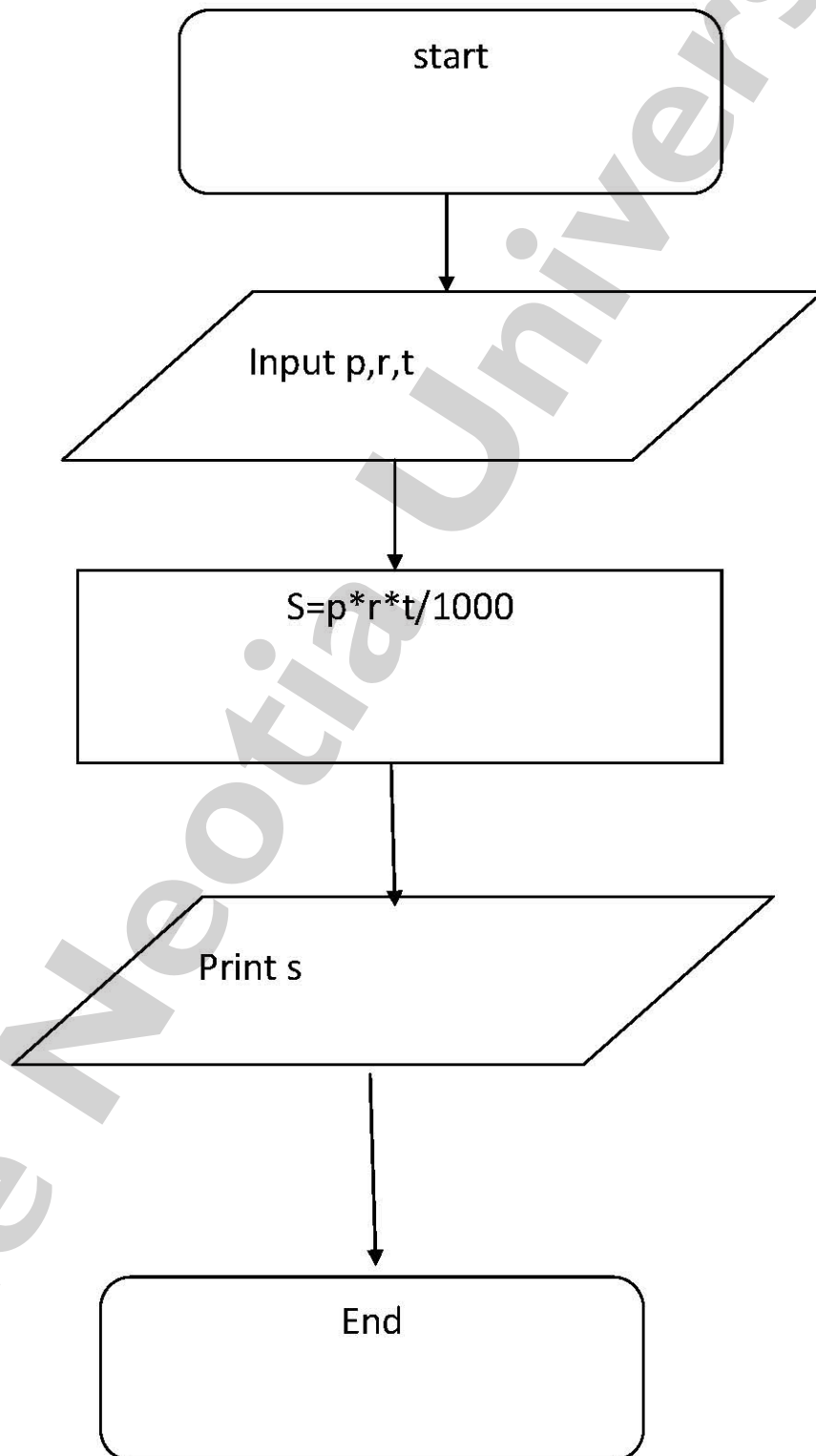5   MERGE(A, p, q, r)

MERGE(A, p, q, r)

1    $n_1 = q - p + 1$
2    $n_2 = r - q$
3   let $L[1 .. n_1 + 1]$ and $R[1 .. n_2 + 1]$ be new arrays
4   **for** $i = 1$ **to** n_1
5       $L[i] = A[p + i - 1]$
6   **for** $j = 1$ **to** n_2
7       $R[j] = A[q + j]$
8    $L[n_1 + 1] = \infty$
9    $R[n_2 + 1] = \infty$
10   $i = 1$
11   $j = 1$
12   **for** $k = p$ **to** r
13   **if** $L[i] \leq R[j]$
14        $A[k] = L[i]$
15        $i = i + 1$
16   **else** $A[k] = R[j]$
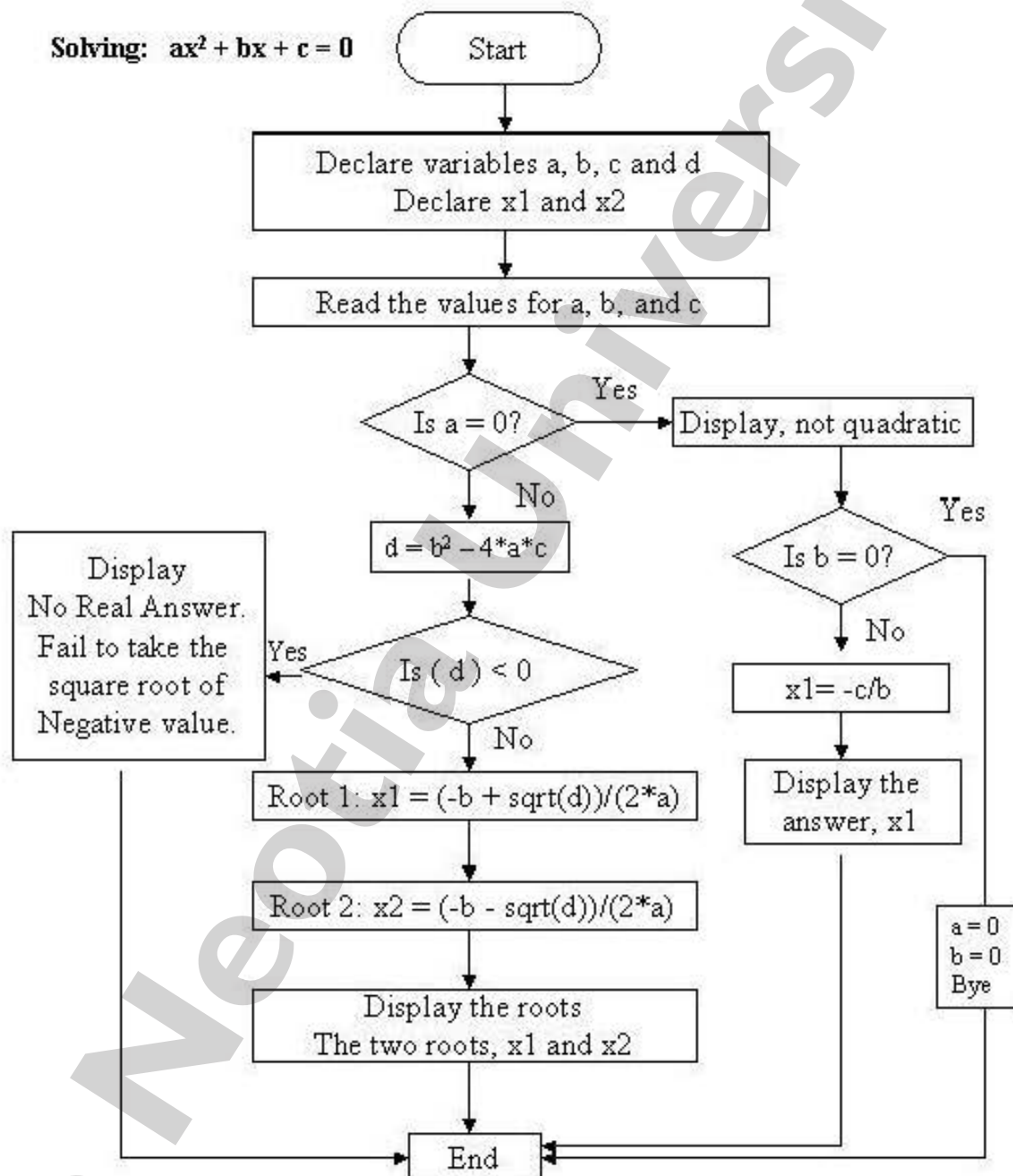17 $j = j + 1$

- this algorithm taken from the book of clrs

Flowchart

Draw a flowchart to calculate simple interest

start

Input p,r,t

$S=p*r*t/1000$

Print s

End

Draw a flowchart to calculate roots of quadratic equation

Solving: $ax^2 + bx + c = 0$

Start

Declare variables a, b, c and d
Declare x1 and x2

Read the values for a, b, and c

Is a = 0? → **Yes** → Display, not quadratic

No

$d = b^2 - 4*a*c$

Display
No Real Answer.
Fail to take the
square root of
Negative value.

Yes ← Is (d) < 0

No

Is b = 0? → **Yes**

No

x1= -c/b

Root 1: x1 = (-b + sqrt(d))/(2*a)

Display the
answer, x1

Root 2: x2 = (-b - sqrt(d))/(2*a)

Display the roots
The two roots, x1 and x2

a = 0
b = 0
Bye

End

This picture is taken from internet

MS Word

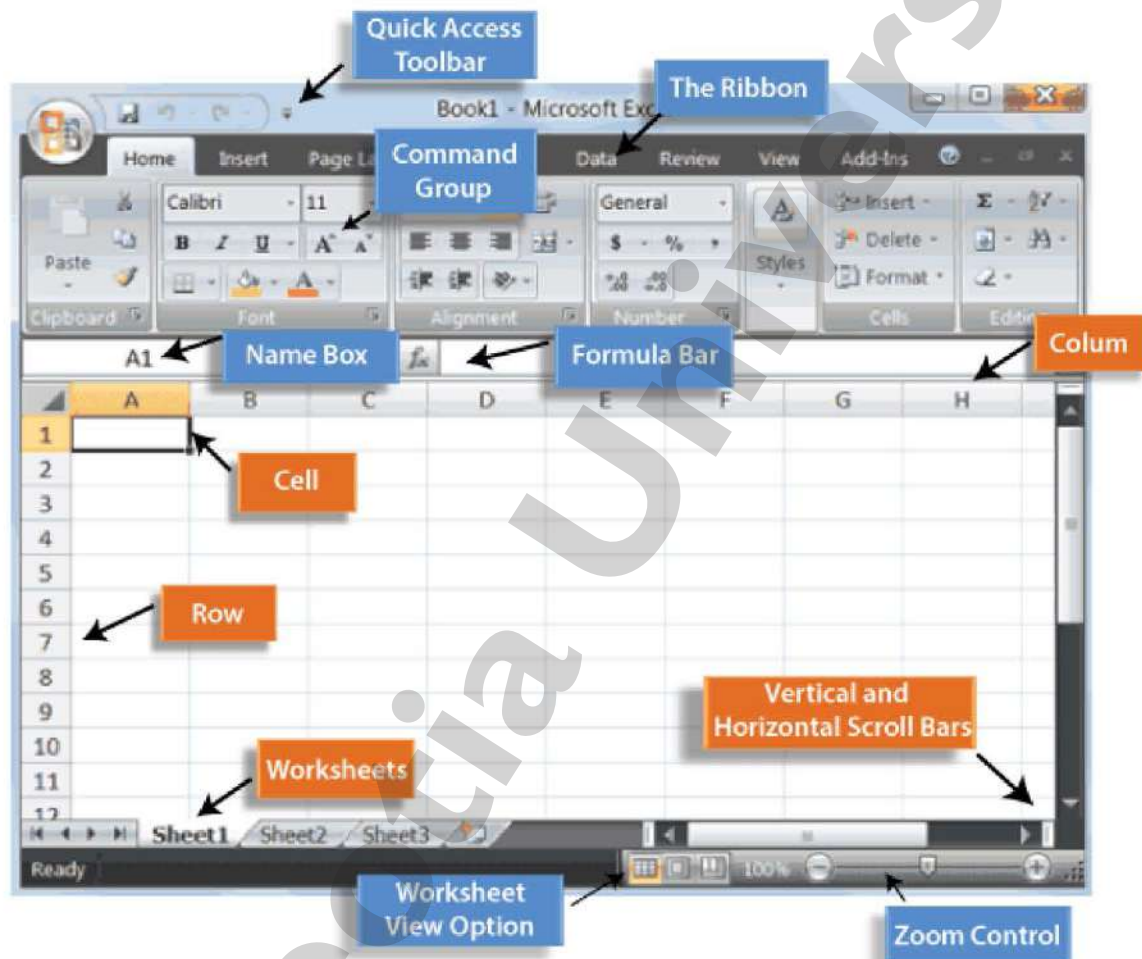## Create biodata using MS word
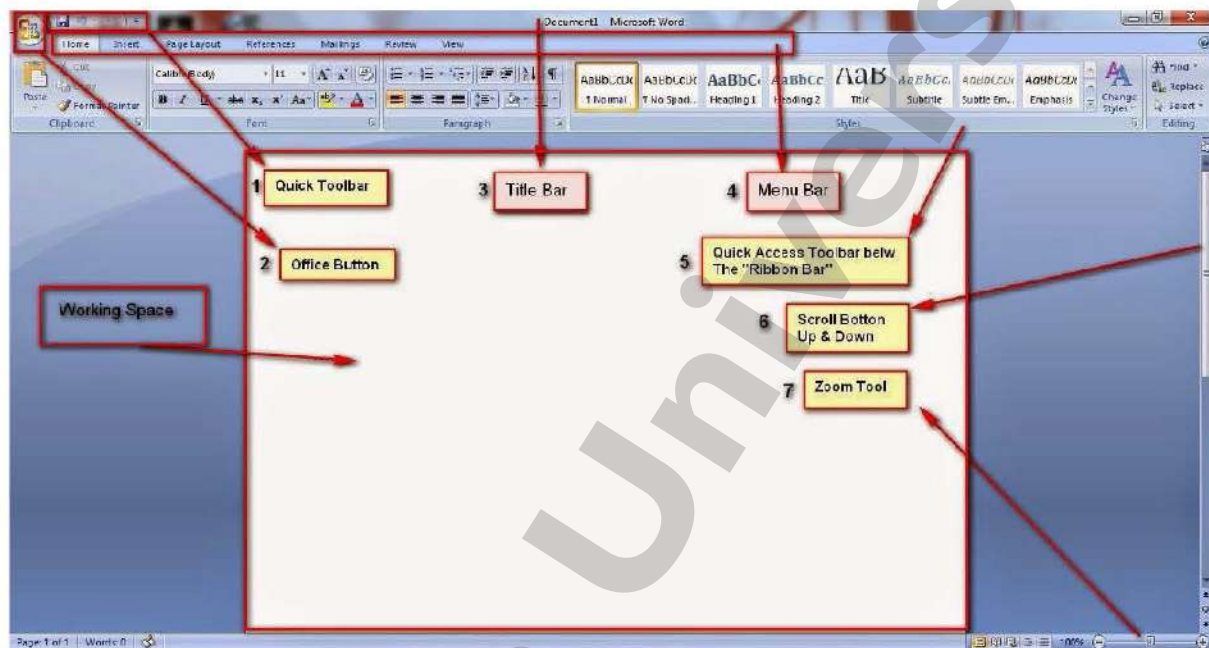
- Open MS word

  Step 1 – Click the Start button.

  Step 2 – Click the All Programs option from the menu.

  Step 3 – Search for Microsoft Office from the submenu and click it.

  Step 4 – Search for Microsoft Word from the submenu and click it.

- Type content of your bio data in working space

- Use different commands to format your document(commands are divided in groups and groups are arranged in tabs)

- Save (Press CTRL+s and give a file name)

MS Excel

Create payroll system using MS excel

- Open MS Excel

  Step 1 – Click the Start button.

  Step 2 – Click the All Programs option from the menu.

  Step 3 – Search for Microsoft Office from the submenu and click it.

  Step 4 – Search for Microsoft Excel from the submenu and click it.

- Insert data into the cells

- Use following functions from formula tab to calculate values

1. Sum to calculate summation
2. Average to calculate average
3. Arithmetic function to calculate different components of salary based on basic pay

- Save(press CTRL+s and give a file name)

MS PowerPoint

Create presentation using MS PowerPoint

- Open MS PowerPoint

  Step 1 – Click the Start button.

  Step 2 – Click the All Programs option from the menu.

  Step 3 – Search for Microsoft Office from the submenu and click it.

  Step 4 – Search for Microsoft PowerPoint from the submenu and click it.

- **Getting started** When you first open PowerPoint, you'll see a blank "slide" with space for a title and a subtitle in different boxes.. Add a title and subtitle in the boxes .If you want you can delete the boxes and insert a photo, graph, or another object onto the slide.

- **Creating new slide** Go to the menu bar at the top of the page and select "Insert" and "New Slide."You see "Click to add title" and "Click to add text."You can type a title and text in these boxes, or you can delete them and add any type of text, photo, or object that you like by using the "Insert" command.

- Repeat above step to add more slides .

- If necessary use several available commands to modify slides

- **Add design** Go to "Format" on the menu bar and select "Slide Background." Your design choices will show up on the right side of the page. Click on the different designs to see how your slide will look in each format. The design you select will be applied to all your slides automatically

- **Preview** Go to "View" on the menu bar and select "Slide Show." Your presentation will appear. To move from one slide to another, use the arrow keys on your computer keyboard.

- Save (Press CTRL+s and give the file name).

Internet applications

Web Browsing

- Open any browser
- Type address/URL of the site you want to visit. Press enter
- Navigate inside the website by clicking on the link.
- If you do not know the website address or URL use any search engine like
    1. https://www.bing.com
    2. https://www.google.com

Creation and operation of Email account

Creating Email account

- Go to the Account creation page of email service provider.
- Follow the steps on the screen to set up your account.
- Use the account you created to sign in to your email account.

Composing and Sending Email

- Go to compose a message. Specify the following things:
    - Sender's address in To field(mandatory)
    - Cc (if required)
    - Bcc (if required)
    - Subject of email message(good practice)
    - Text(content of email)
    - Signature(optional)
- Press send button

Reading Email

- Go to inbox.
- Click on that email. Once you click a particular email, it gets opened.
- The attachments are shown at the bottom of the opened email with an option called **download attachment**

Replying Email

- To reply an email, click Reply option shown at the bottom of the opened email.

- Once you click on Reply, it will automatically copy the sender's address in to the To field. Below the To field, there is a text box where you can type the message.

- Once you are done with entering message, click Send button.

Forwarding Email

- It is also possible to send a copy of the message that you have received along with your own comments if you want. This can be done using forward button available in mail client software

Deleting Email

- You can delete it by simply selecting the message from the message list and clicking delete or pressing the appropriate command.

Analysis of fisheries data using MS Excel

- Collect fishery related data

- Load data in ms excel if the data in text/CSV file use following steps

1. Go to File > Open and browse to the location that contains the text file.
2. Select Text Files in the file type dropdown list in the Open dialog box.
3. Locate and double-click the text file that you want to open.
   - If the file is a text file (.txt), Excel starts the Import Text Wizard. When you are done with the steps, click Finish to complete the import operation.
   - If the file is a .csv file, Excel automatically opens the text file and displays the data in a new workbook

- Analysis the data

Following function may be used

1. Average-for calculating average
2. Max-for calculating maximum of set of values
3. Min-for calculating minimum of set of values
4. Sum-for calculating summation
5. Median-for calculating median of the set of numbers
6. Mode- for calculating mode of the set of numbers
7. Stdev- for calculating standard deviation of the set of number

- Save (press CTRL +S)

Handling of audio visual equipments

Planning, preparation, presentation of posters

- Planning :Each student will select a topic
- Preparation :Students will gather information about the selected topic
- Then create a poster.
- Give brief presentation on topic

Planning, preparation, presentation of Charts

- **Planning** :Each student will select a topic
- **Preparation** :Students will gather information about the selected topic
- Then create a chart using collected data.
  For chart creation use following steps

  1. Open MS power point
  2. Click Insert > Chart.
  3. Click the chart type and then double-click the chart you want. ...
  4. In the worksheet that appears, replace the placeholder data with your own information.
  5. When you've finished, close the worksheet

- Give presentation using chart.

Planning, preparation, presentation of overhead transparencies

- **Planning** :Each student will select a topic

- **Preparation** :Students will gather information about the selected topic

- Then create overhead transparencies.

Steps for creating overhead transparencies

1. Create your presentation using the desired program on your computer. For example, you can use Microsoft Word or Microsoft Publisher depending on the type of presentation you want to create. Use an easily legible font, such as New Times Roman, and select a larger font size when adding text to your presentation.

2. Print a copy of your presentation on regular paper. This allows you to review the appearance of the document and make any necessary corrections without wasting any transparencies.

3. Load the transparencies into your printer, making sure to load them with the correct side facing up. Refer to the manufacturer's instructions for proper loading technique.

4. Set your print options for printing on transparencies, and then print your presentation. Refer to the printer manufacturer's instructions when selecting the correct transparency print option settings

5. Remove each transparency immediately after printing. Place the transparencies in a single-layer on a flat surface to dry. Allow them to dry completely before use.

- Give presentation on the topic using overhead transparencies.

Planning, preparation, presentation of slides

- **Planning** :Each student will select a topic
- **Preparation** :Students will gather information about the selected topic
- Then create slides using MS power point
- Give presentation using slides

Organization of an audio visual programme

- Selection of the topic of the program.

- Selection of the date and venue of the program.

- Creation of groups
  Following groups may be considered
    1. Content creator
    2. Reviewer
    3. Speaker
    4. Coordinator

- Assignment of responsibility with deadlines to the groups

- Arrangement of mock programme

- Organize and participate in the program