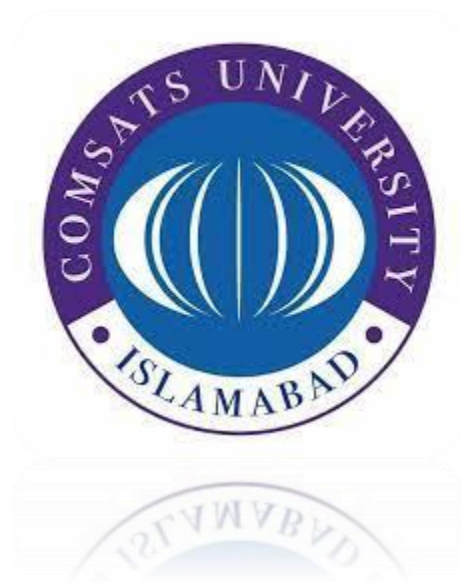




Algorithms

Lab task#01

SP23-BCS-133 (ANOSHA FATIMA)
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Comsats University Islamabad
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Section: **BCS-SP23(A)**

Statement:

Discuss the importance of algorithms in computer programming.

Describe and list down the rules for available algorithm writing styles.

Write algorithms using any two styles you listed in your report for the problem.

PROBLEM:

Calculate the salary of an employee if basic salary (BS) is taken from the users. The salary is calculated according to the following rules.

If basic salary is less than 30000,

HOUSE RENT ALLOWANCE(HRA)=75% of BS

MEDICAL ALLOWANCE(MA)=10% of BS

TAX=5% of BS

If BS is between 30000 to 60000 inclusive

HOUSE RENT ALLOWANCE (HRA)=50% of BS

MEDICAL ALLOWANCE (MA)=15% of BS

TAX=10% of BS

If BS is greater than 60000, then.

HOUSE RENT ALLOWANCE (HRA)=40% of BS

MEDICAL ALLOWANCE(MA)=20% of BS

TAX=15% of BS

FORMULA= SALARY=BS+HRA+MA-TAX

ALGORITHMS:

❖ DEFINITION:

It is a procedure used for solving a problem or performing a computation.

❖ **IMPORTANCE:**

- It is a stepwise representation of a solution which makes it easy to understand.
- An algorithm uses a definite procedure.
- It is language independent.
- Every step of the algorithm has its own logical sequence, so it is easy to debug.
- By using algorithms, the problem is broken down in small steps so it is easy to convert it in a program.

RULES FOR ALGORITHMS WRITING STYLES:

FLOWCHART:

A diagram of sequence of movements or actions of people or things involved in a complex activity is called flowchart. It contains different symbols.

➤ RULES:

There are few rules to go for flowcharts:

- ❖ Always format your flow from left to right or top to bottom.
- ❖ Run your return lines under your flowchart, ensuring they don't overlap.
- ❖ Maintain consistent spacing between symbols.

PSEUDOCODE:

It is an artificial and informal language that helps programmers develop algorithms.

➤ RULES:

- Always capitalize the initial word
- Make only one statement per line.
- Indent to show hierarchy, improve readability, and shows nested constructs.

DECISION TABLE:

A decision table is a schedule rule logic entry, in table format , that consists of conditions , represented in rows and columns.

➤ RULES:

- Draw boxes for the top and bottom left quadrants.
- List the conditions in the top left quadrants.
- List the possible actions in the bottom left quadrant.

PSEUDOCODE FOR THE PROBLEM:

INPUT=Basic salary

OUTPUT=Salary

If basic salary is < 30000 then

$HRA = 0.75 * BS$

$MA = 0.1 * BS$

$TAX = 0.05 * BS$

else if basic salary ≥ 30000 and ≤ 60000 then

$HRA = 0.5 * BS$

$MA = 0.15 * BS$

$TAX = 0.1 * BS$

else if basic salary > 60000

$HRA = 0.4 * BS$

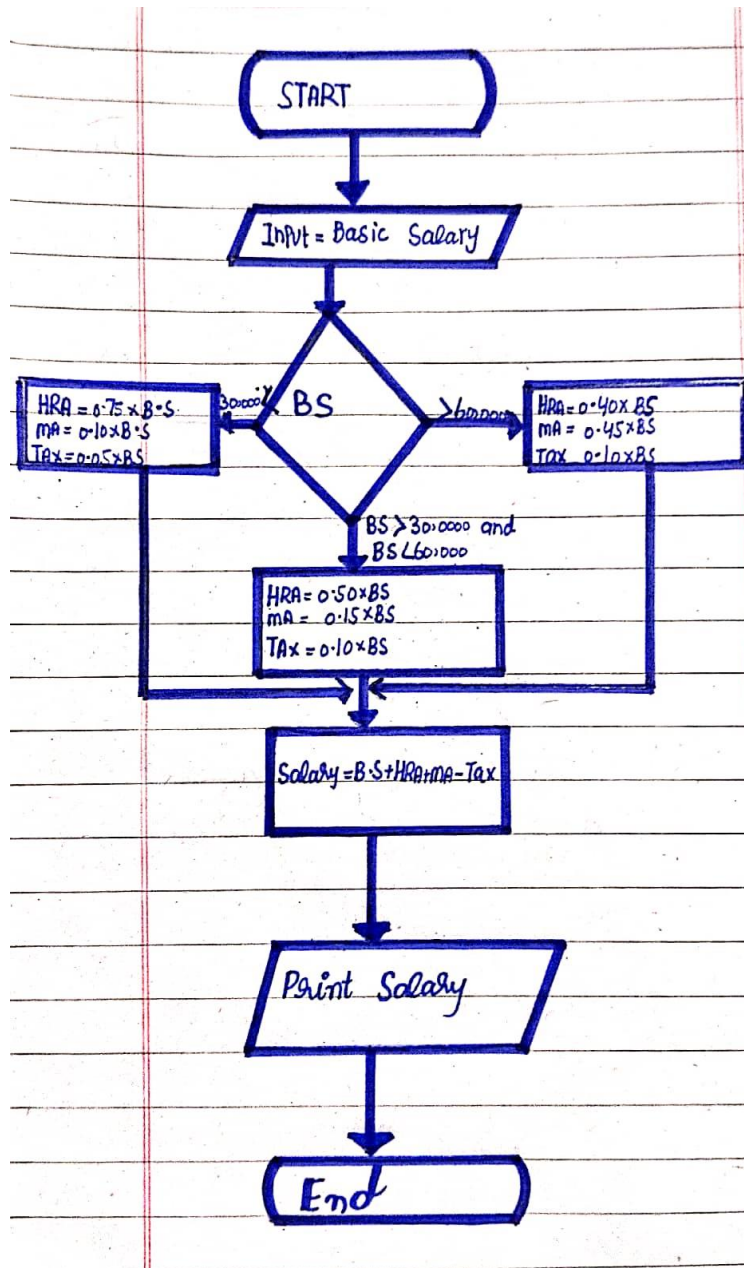
$MA = 0.2 * BS$

$TAX = 0.15 * BS$

end if

$SALARY = BS + HRA + MA - TAX$

FLOWCHART FOR THE PROBLEM:



----The End----

