**National University of Modern Languages,**

**Regional Campus, Hyderabad**

**Department of Computer Science**



**Name: Durr e shehwar**

**Batch: BSCS III**

**Practical no:4**

**Submitted to**

**Sir Rafay**

**Date:17-03-2023**

1. Simplify given expression using Standard Sum of Product, also show step by step process of building a circuit and designing a truth table.
2. F1(A,B,C) = A’B’C + BC’ + AC’

Simplifying by using SOP

= A’B’C + (A+A’)BC’ + AC’(B+B’)

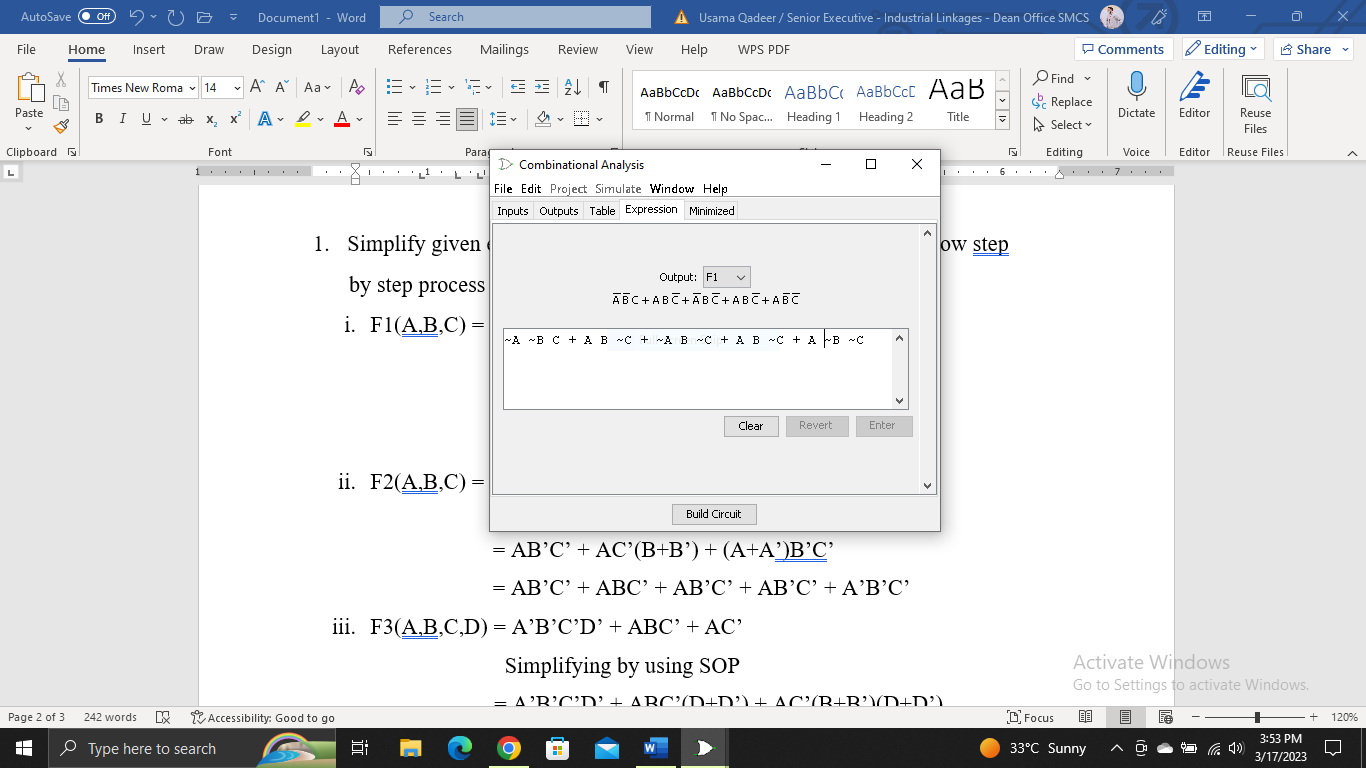
= A’B’C + ABC’ + A’BC’ + ABC’ + AB’C’

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated



Graphical user interface, application, Word

Description automatically generated

Diagram

Description automatically generated

1. F2(A,B,C) = AB’C’ + AC’ + B’C’

Simplifying by using SOP

= AB’C’ + AC’(B+B’) + (A+A’)B’C’

= AB’C’ + ABC’ + AB’C’ + AB’C’ + A’B’C’

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Diagram, schematic

Description automatically generated

1. F3(A,B,C,D) = A’B’C’D’ + ABC’ + AC’

Simplifying by using SOP

= A’B’C’D’ + ABC’(D+D’) + AC’(B+B’)(D+D’)

=A’B’C’D’ + ABC’D + ABC’D’ + ABC’(D+D’) + AB’C’(D+D’)

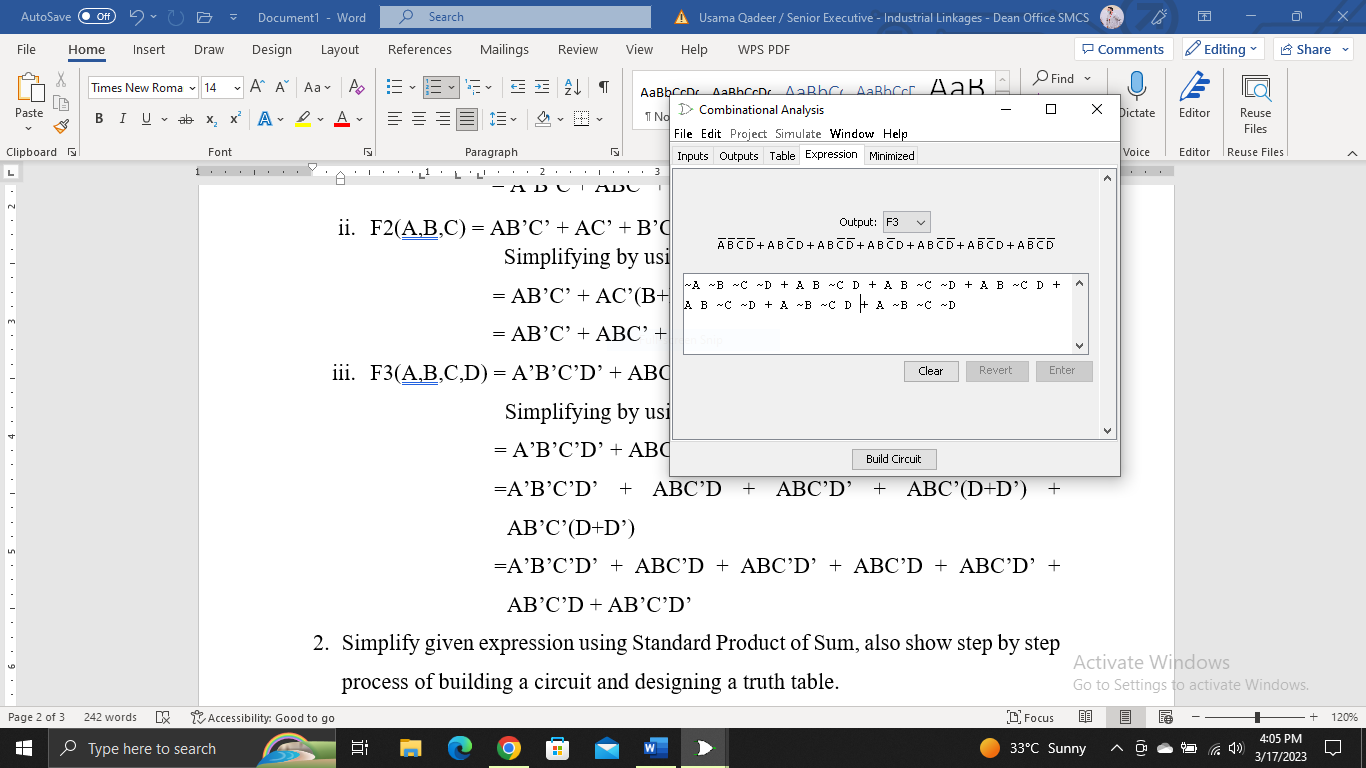
=A’B’C’D’ + ABC’D + ABC’D’ + ABC’D + ABC’D’ + AB’C’D + AB’C’D’

Graphical user interface, application, Word

Description automatically generated

Graphical user interface, application, Word

Description automatically generated



Graphical user interface, application, Word

Description automatically generated

Diagram, schematic

Description automatically generated

1. Simplify given expression using Standard Product of Sum, also show step by step process of building a circuit and designing a truth table.
2. F1(A,B,C) = (A’+B’+C ) ( B+C’) ( A+C’)

Simplifying by using POS

= (A’+B’+C) (B+C’+AA’) (A+C’+BB’)

= (A’+B’+C) (A+B+C’) (A’+B+C’) (A+B+C’) (A+B’+C’)

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Diagram

Description automatically generated

1. F2(A,B,C) = (A’+B’ ) ( A+C’) ( B+C’)

Simplifying by using POS

= (A’+B’+CC’) (A+C’+BB’) (AA’+B+C’)

= (A’+B’+C) (A’+B’+C’) (A+B+C’) (A+B’+C’) (A+B+C’) (A’+B+C’)

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated with low confidence

Diagram, schematic

Description automatically generated

1. F1(A,B,C,D) = (A’+B’+C+D ) ( B+C’+D) ( A+C’)

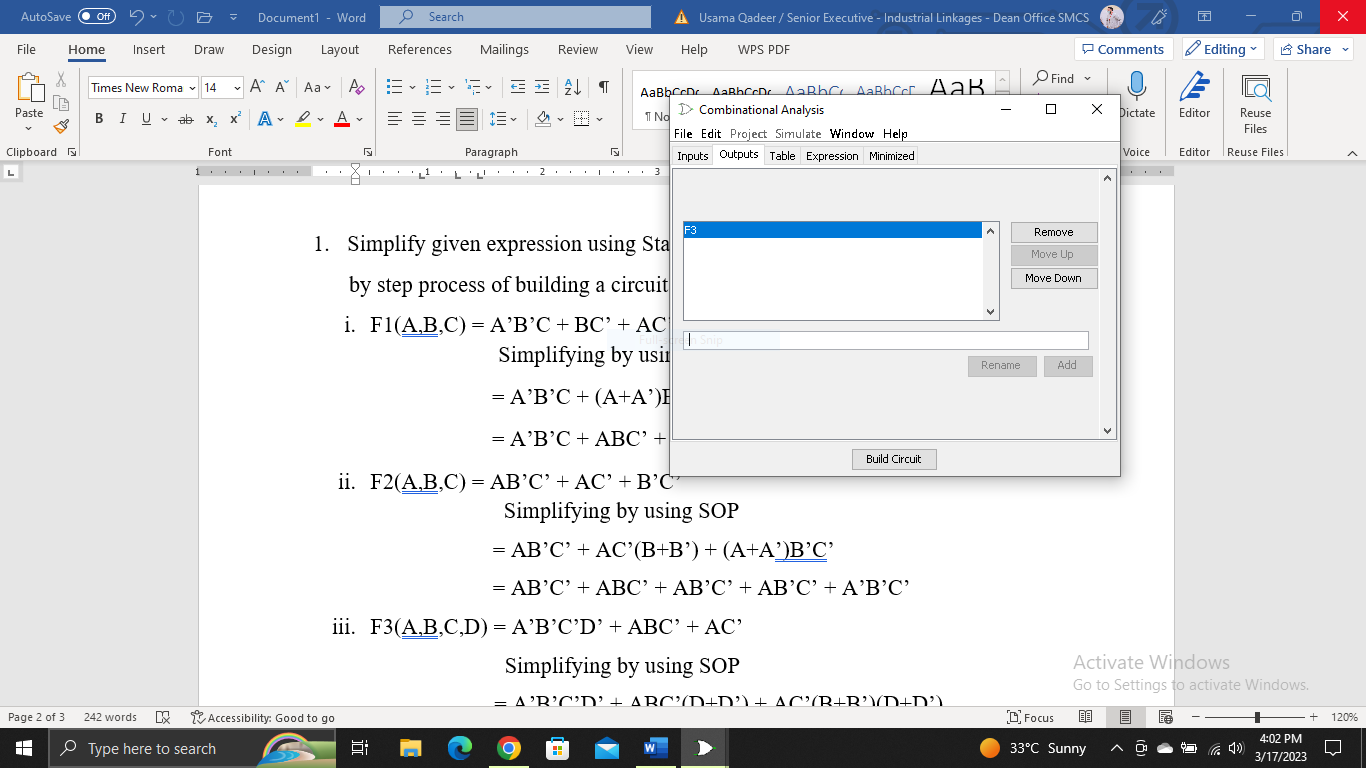
Simplifying by using POS

= (A’+B’+C+D) (AA’+B+C’+D) (A+BB’+C’+DD’)

= (A’+B’+C+D) (A+B+C’+D) (A’+B+C’+D) (A+B+C’+D) (A+B’+C’+D) (A+B+C’+D’) (A+B’+C’+D’)

Graphical user interface, application, Word

Description automatically generated



Graphical user interface, application, Word

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

Diagram, schematic

Description automatically generated

1. Why do we convert SOP & POS into their Canonical form?

* Standardization makes the evaluation, simplification, and implementation

of Boolean expressions much more systematic and easier.

* We Perform Sum of Product & Product of Sum for converting Truth

Table into Logical Expression.

1. What is Combinational Analysis?

A combinational analysis is a report that combines the results of multiple reports (criteria) into a single report. The way in which we combine these reports allow us to simulate joins in the data that otherwise don’t exist.

1. What are minterms and Maxterms?

* **Minterms:**

In a Boolean function, a product term in which all the variables appear is called a minterm of the function. Minterms specify the function as an OR of the minterms (product terms).

* **Maxterms:**

In a Boolean function, a sum term in which all the variables appear is called a maxterm of the function. Maxterms specify the function as an AND of the maxterms (product terms).