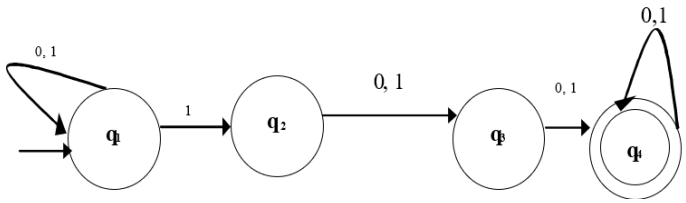
Name: **STANLEY NGUGI** *Registration Number*: **SCT212-0065/2017**

1. ***A state diagram is provided, should provide a summary of the language recognized by the machine***



Possible Transition Paths, input indicated in brackets	String
q_1 (1) → q_2 (1)→ q_3 (1) → q_4 (1) → q_4 (1) → q_4	11111
q_1 (0) → q_1 (1) → q_1 (1) → q_2 (0) → q_3 (1) → q_4	011011
q_1 (1) → q_2 (0) → q_3 (0) → q_4	100
q_1 (1) → q_1 (0) → q_1 (1) → q_2 (0) → q_3 (1) → q_4	10101

The Machine accepts a language whose strings must contain at least a single '1'.

2. ***A state diagram is provided and you should***
   a. ***describe how the machine transitions on input 000111***

(q_2, \$) ∈ δ (q_1, ∈, ∈)
(q_2, 0) ∈ δ (q_2, 0, ∈)
(q_2, 0) ∈ δ (q_2, 0, ∈)
(q_2, 0) ∈ δ (q_2, 0, ∈)
(q_3, ∈) ∈ δ (q_2, 1, 0)
(q_3, ∈) ∈ δ (q_3, 1, 0)
(q_3, ∈) ∈ δ (q_3, 1, 0)
(q_4, ∈) ∈ δ (q_3, ∈, \$)

   b. ***Identify the error in the transition table provided for the same machine in the formal description)***

Error:

(q_2, 0) ∈ δ (q_2, 0, ∈)

Correction Transition:

(q_3, ∈) ∈ δ (q_2, 1, 0)

Other Transitions

(q_3, ∈) ∈ δ (q_3, 1, 0)

(q_4, ∈) ∈ δ (q_3, ∈, \$)

(q_2, \$) ∈ δ (q_1, ∈, ∈)