# BREADTH FIRST SEARCH ALGORITHM
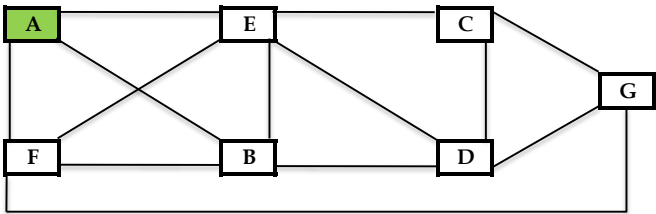
When the vertices are enqueued in different order.
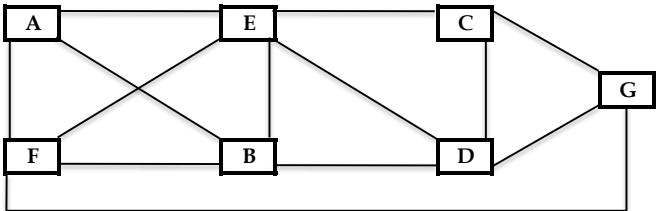


|   | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| A | **0** | 1 | 0 | 0 | 1 | 1 | 0 |
| B | 1 | **0** | 0 | 1 | 1 | 1 | 0 |
| C | 0 | 0 | **0** | 1 | 1 | 0 | 1 |
| D | 0 | 1 | 1 | **0** | 1 | 0 | 1 |
| E | 1 | 1 | 1 | 1 | **0** | 1 | 0 |
| F | 1 | 1 | 0 | 0 | 1 | **0** | 1 |
| G | 0 | 0 | 1 | 1 | 0 | 1 | **0** |

**Adjacency Matrix**

## Initial State



SRC :=    **A**

| VISITED[] | **T** | F | F | F | F | F | F |
|---|---|---|---|---|---|---|---|
|  | A | B | C | D | E | F | G |

| PATH[] | A | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|
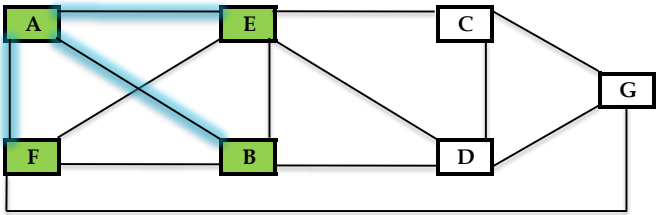


Dequeue   **A**         Enqueue:   F, E, B

| A | **0** | 1 | 0 | 0 | 1 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| VISITED[] | **T** | **T** | F | F | **T** | **T** | F |
|  | A | B | C | D | E | F | G |

| PATH[] | A | F | E | B | - | - | - |
|---|---|---|---|---|---|---|---|
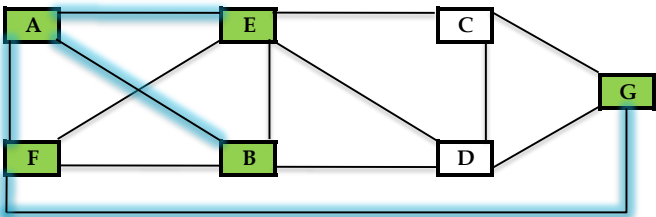


Dequeue   **F**         Enqueue:   G

| F | 1 | 1 | 0 | 0 | 1 | **0** | 1 |
|---|---|---|---|---|---|---|---|
| VISITED[] | **T** | **T** | F | F | **T** | **T** | **T** |
|  | A | B | C | D | E | F | G |

| PATH[] | A | F | E | B | G |  |  |
|---|---|---|---|---|---|---|---|
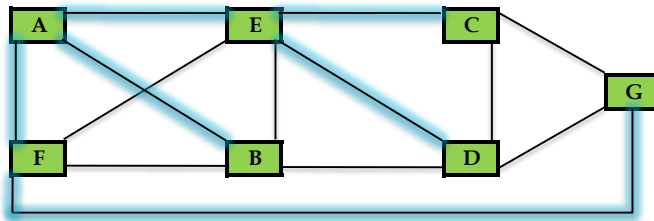
**Dequeue**   **E**     Enqueue:   C, D

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| E | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| VISITED[] | T | T | T | T | T | T | T |
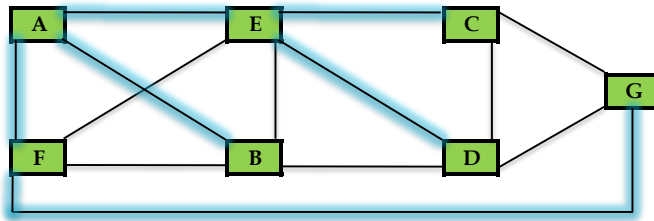
PATH[]

| A | F | E | B | G | C | D |
|---|---|---|---|---|---|---|



**Dequeue**   **B**     [No Change, |V| traversed ]

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| B | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| VISITED[] | T | T | T | T | T | T | T |

PATH[]

| A | F | E | B | G | C | D |
|---|---|---|---|---|---|---|

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AY - 2019-20