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Description automatically generated**

**School Of Information Technology**

**IT2553 DSA**

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| **Admin No & Team Members Name:** | 201520M: Eden Will Sng Jin Xuan |
| **PEM Group:** | SF2102 |
| **Module:** | DSA |
| **Assignment:** | Tutorial 10 |

1A) (A \* B) / C Postfix and prefix expression

Post Fix:

(A \* B) / C

(AB\*) C /

A B \* C /

Prefix:

(A \* B) / C

/ (\* A B ) C

/ \* A B C

1B) A – ( B \* C ) + D / E

Postfix:

((A - (B \* C ) ) + ( D / E ) )

( (A (B C \*) -) (DE /) +)

ABC \* - DE / +

Prefix

((A - (B\* C)) + (D / E))

(+ (- A (\* B C)) (/ D E))

+ - A \* BC/ DE

1C) (X - 5) + (7 \*Z) / V

Postfix:

((X- 5) + ((7 \* Z) / V))

((X 5 -) ((7 Z \*) V /) +)

X 5 – 7 Z \* V / +

Prefix:

((X - 5) + ((7 \* Z) / V))

(+ (- X 5) (/ (\* 7 Z) V))

+- X5 /\* 7Z V

1D) V \* W \* 8 + Y - Z

Postfix:

((((V \* W) \* 8) + Y ) - Z)

((((VW \*) 8 \*) Y + ) Z -)

V W \* 8 \* Y + Z –

Prefix:

((((V \* W) \* 8) + Y ) – Z)

(- (+(\* (\*V W) 8) Y ) Z)

- + \* \* V W 8 Y Z

1E) A / B \* C - D+E

Postfix:

((A / B) \* C) - D) + E)

(((AB /) C \*) D -) E +)

A B / C \* D - E +

Prefix:

((((A / B) \* C) - D) + E)

(+ (- (\* / A B) C) D) E)

+ - \* / A B C D E

2)

A) 3 8 + 10 3 - \*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Expression |  |  |  |  |  |  |  |  |  |  |
| Stack |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 3 |  |  |  |  |  |
|  | 8 |  | 10 | 10 | 7 |  |  |  |  |
| 3 | 3 | 11 | 11 | 11 | 11 | 77 |  |  |  |

Valid Postfix expression

b) 2 3 ^ 4 ^

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Expression |  |  |  |  |  |  |  |  |  |  |
| Stack |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | 3 |  | 4 |  |  |  |  |  |  |
| 2 | 2 | 8 | 8 | 4096 |  |  |  |  |  |

c) 8 2 + 10 - 10

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Expression |  |  |  |  |  |  |  |  |  |  |
| Stack |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | 2 |  | 10 |  | 10 |  |  |  |  |
| 8 | 8 | 10 | 10 | 0 | 0 |  |  |  |  |

Invalid Postfix expression

d) 15 3 / 5 10 - / 100 ^

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Expression |  |  |  |  |  |  |  |  |  |  |
| Stack |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 10 |  |  |  |  |  |
|  | 3 |  | 5 | 5 | 5 |  | 100 |  |  |
| 15 | 15 | 5 | 5 | 5 | 5 | 1 | 1 | 1 |  |

Valid postfix expression

e)25 4 \* 20 15 - / 2 / 18 +

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Expression |  |  |  |  |  |  |  |  |  |  |  |
| Stack |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 15 |  |  |  |  |  |  |
|  | 4 |  | 20 | 20 | 5 |  | 2 |  | 18 |  |
| 25 | 25 | 100 | 100 | 100 | 100 | 20 | 20 | 10 | 10 | 28 |

Valid Postfix expression

3)Python Code

4) Python code