



Department of Computer Science

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M.Sc-IT (Part 1)

Course: **Data Structures and Algorithms**

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1 Minimum Element from Stack.

Sr.No: 1

Date: 21-09-2020

1.1 Problem Statement

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

Conditions Include:

$$0 \leq x \leq 2 \times 10^{20}$$

1.2 Algorithmic Approach

Algorithm 1: Stack Algorithm

Result: Operations are carried out on the stack and the minimum value at any given time kept track of.

initialization;

while *While condition* **do**

 instructions;

if *condition* **then**

 instructions1;

 instructions2;

else

 instructions3;

end

end

1.3 Source Code

```
from PIL import Image, ImageDraw, ImageFont

# loop through all the entries
for i in range(1, 1000):
    img = Image.new('RGB', (1280, 720), color = (255, 0, 0))
    fnt = ImageFont.truetype('beb.otf', 250)
    title = "DAY #{}".format(i)
    d = ImageDraw.Draw(img)
    d.text((50,300), title, font=fnt, fill=(255, 255, 255))
    img.save(title+'.png')

print("Done !")
```

Listing 1: Class definition for the stack operations.

1.4 Output

```
case with true minimum

In [1]: import BookStack as B
import time

t0 = time.time()
print("Min: ", B.equalStacks([1, 1, 4, 1], [3, 2, 4], [1, 1, 1, 5]))
t1 = time.time()

total = t1-t0
print("Process finished in ", total , "seconds")

Min: 6
Process finished in 0.0011131763458251953 seconds
```

1.5 References

Ladd, S., Xin, Y., Yang, J., Liu, P., & Wu, L. (1998). Java suan fa = JAVA ALGORITHMS. Beijing: Dian Zi Gong ye Chu Ban She.