Labwork$_6$

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1 Labwork 6a

In this labwork, we take the code from labwork 4 and we just add a threshold in order to binarize the image. Here are the results of binarization with different block size values :

Figure 1: Result of Labwork 6a

```
Block size = 1 x 1  ->  Time taken = 0.082826 sec
Block size = 2 x 2  ->  Time taken = 0.000385 sec
Block size = 4 x 4  ->  Time taken = 0.000143 sec
Block size = 8 x 8  ->  Time taken = 0.000084 sec
Block size = 12 x 12  ->  Time taken = 0.000081 sec
Block size = 16 x 16  ->  Time taken = 0.000097 sec
Block size = 20 x 20  ->  Time taken = 0.000080 sec
Block size = 24 x 24  ->  Time taken = 0.000086 sec
Block size = 28 x 28  ->  Time taken = 0.000099 sec
Block size = 32 x 32  ->  Time taken = 0.000081 sec
```

Figure 2: Time taken for different block size values

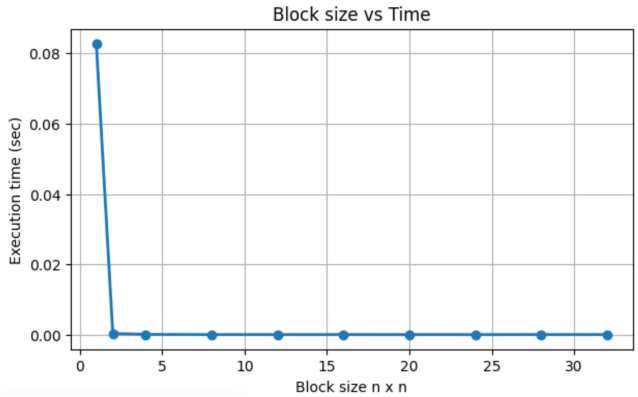

Figure 3: Graph of time taken for different block size values

2 Labwork 6b

In this labwork, we take the last code and we modify the function in order to add or remove brightness. We pay attention that the value do not be under 0 or above 255. Here are the results of brightness with different block size values :

Figure 4: Result of Labwork 6b with -80 of brightness

```
Block size = 1 x 1   ->  Time taken = 0.088435 sec
Block size = 2 x 2   ->  Time taken = 0.000454 sec
Block size = 4 x 4   ->  Time taken = 0.000327 sec
Block size = 8 x 8   ->  Time taken = 0.000149 sec
Block size = 12 x 12   ->  Time taken = 0.000162 sec
Block size = 16 x 16   ->  Time taken = 0.000126 sec
Block size = 20 x 20   ->  Time taken = 0.000108 sec
Block size = 24 x 24   ->  Time taken = 0.000102 sec
Block size = 28 x 28   ->  Time taken = 0.000107 sec
Block size = 32 x 32   ->  Time taken = 0.000130 sec
```

Figure 5: Time taken for different block size values

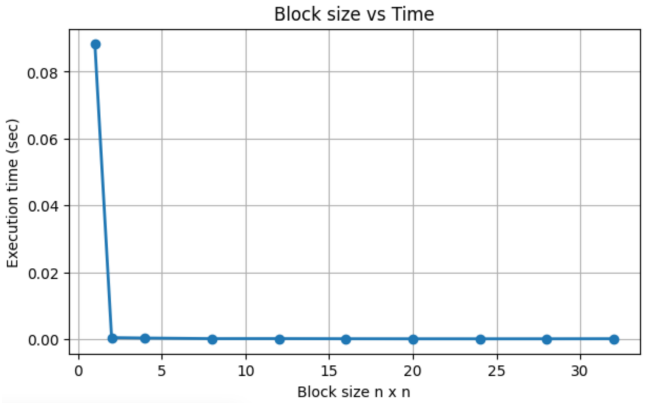

Figure 6: Graph of time taken for different block size values

3 Labwork 6c

In this labwork, we take the last code and we modify the function in order to blend to image. We just addition the average (with a coefficient of the pixels of the image. Here are the results of brightness with different block size values :

Figure 7: Image used for the test and result of Labwork 6c

```
Block size = 1 x 1   ->  Time taken = 0.112806 sec
Block size = 2 x 2   ->  Time taken = 0.000420 sec
Block size = 4 x 4   ->  Time taken = 0.000149 sec
Block size = 8 x 8   ->  Time taken = 0.000132 sec
Block size = 12 x 12   ->  Time taken = 0.000140 sec
Block size = 16 x 16   ->  Time taken = 0.000124 sec
Block size = 20 x 20   ->  Time taken = 0.000121 sec
Block size = 24 x 24   ->  Time taken = 0.000305 sec
Block size = 28 x 28   ->  Time taken = 0.000125 sec
Block size = 32 x 32   ->  Time taken = 0.000118 sec
```

Figure 8: Time taken for different block size values

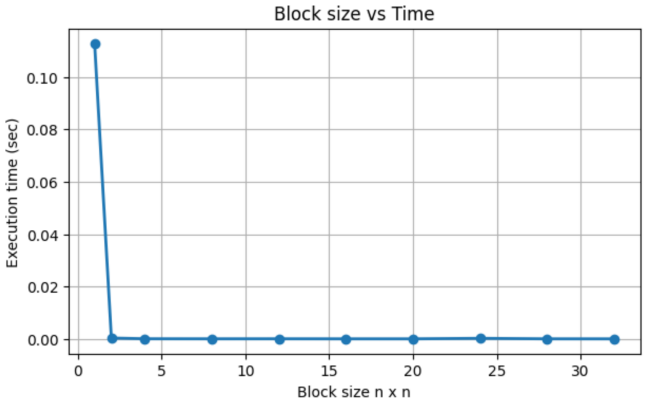

Figure 9: Graph of time taken for different block size values