

Assignment 2

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1 Integrity

I confirm that I will keep the content of this assignment confidential. I confirm that I have not received any unauthorized assistance in preparing for or writing this assignment. I acknowledge that a mark of 0 may be assigned for copied work. Dilpreet Chana #104570850.

2 Implementation Details

The root of the program is the logic to obtain the data from the address. That is using the bit-wise operator to find the page number and offset.

3 Part 1 Outputs

```
./P1 19986
The address 19986 contains:
Page number = 4
Offset = 3602
```

```
./P1 19987
The address 19987 contains:
Page number = 4
Offset = 3603
```

```
./P1 29998
The address 29998 contains:
Page number = 7
Offset = 1326
```

```
./P1 111111
The address 11111 contains:
Page number = 2
Offset = 2919
```

```
./P1 89
The address 89 contains:
Page number = 0
Offset = 89
```

4 Part 1 Code

```
#include <stdio>
#include <stdlib>
#include <stdint>

using namespace std;

int main(int argc, char *argv[]) {
    uint32_t a = (uint32_t)atoi(argv[1]);

    printf("The address %d contains:\n", a);
    printf("Page number = %d\n", a >> 12);
    printf("Offset = %d", a &0xfff);

    return 0;
}
```

5 Part 2 Output

Time: 20852.00 microseconds

6 Part 2 Code

```
#include <stdio>
#include <stdlib>
#include <stdint>
#include <cmath>
#include <time.h>

using namespace std;

int main(int argc, char *argv[]) {
    clock_t t1, t2;

    t1 = clock();
    srand(time(NULL));
    uint32_t a;
```

```

for (int i = 0; i < 1000000; i++) {
    a = (uint32_t)(rand() % (int)(pow(2, 32)));
    a >> 12;
    a &0x0fff;
}
t2 = clock();
float diff ((float)t2 - (float)t1);
printf("Time: %.2f microseconds\n", diff);

return 0;
}

```