Çığır Temelkuran
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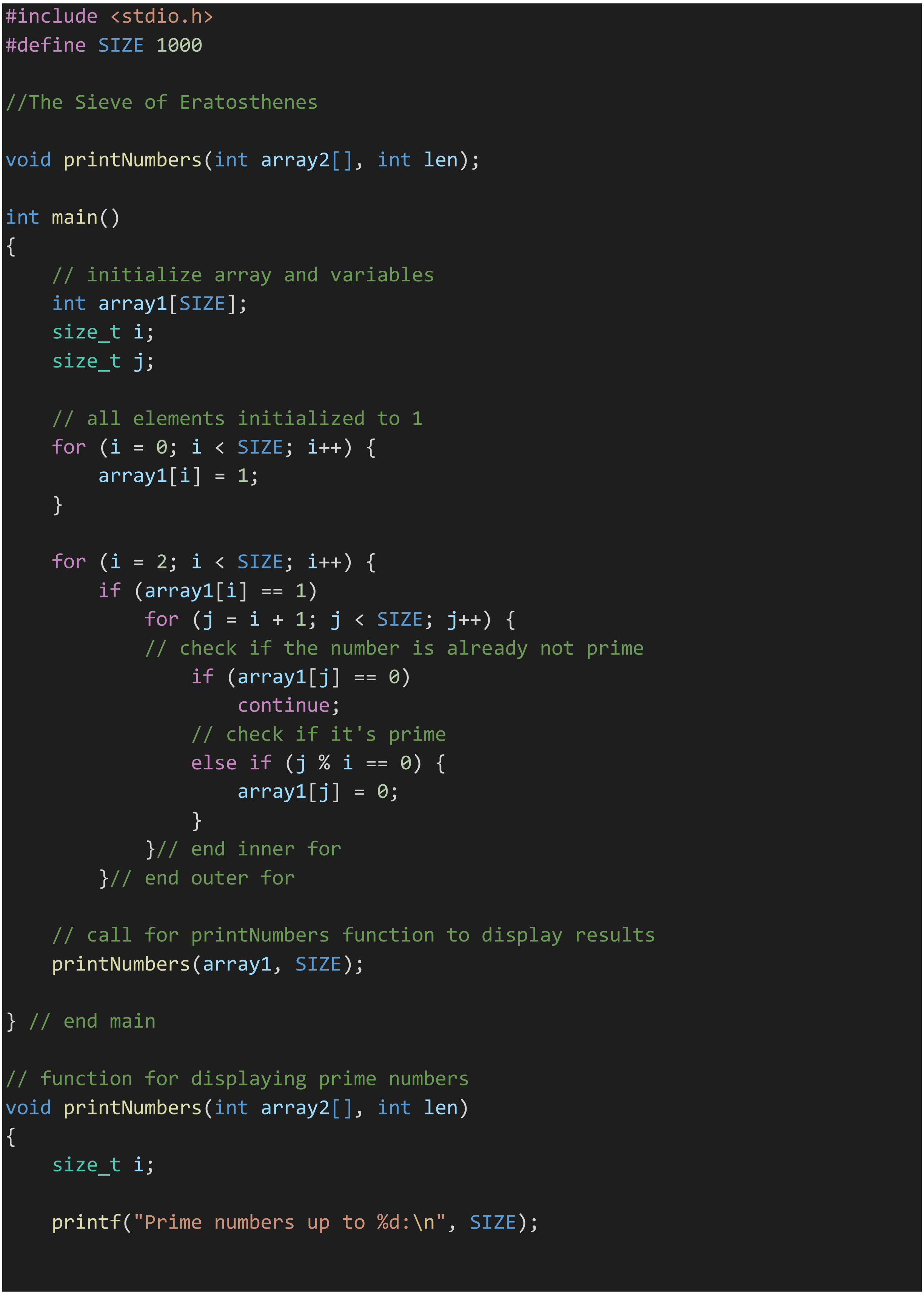
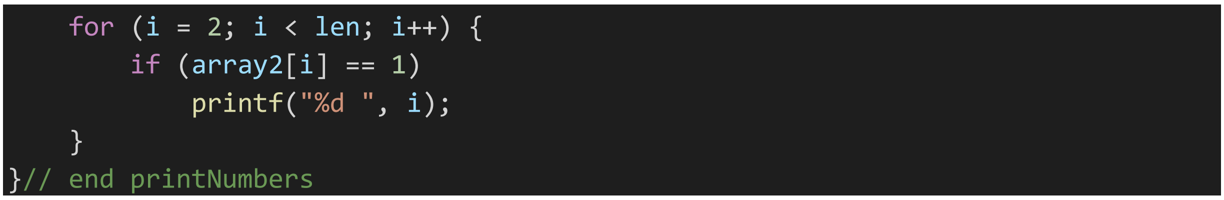
# Homework 4

## **6.30)** The Sieve of Eratosthenes

### Code



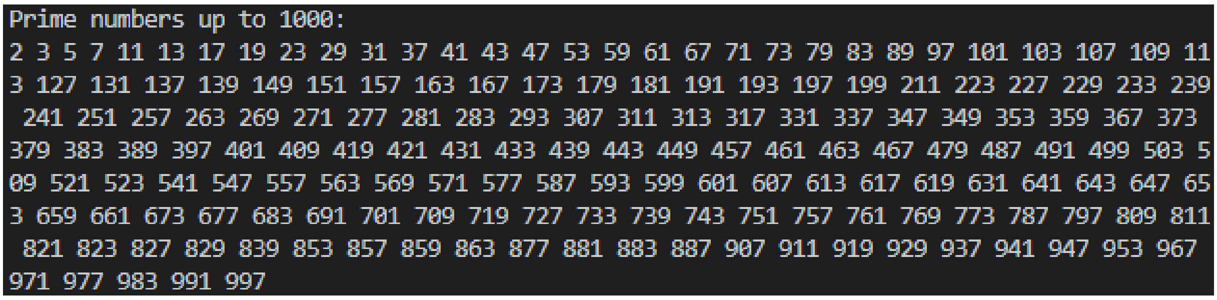
```c
#include <stdio.h>
#define SIZE 1000

//The Sieve of Eratosthenes

void printNumbers(int array2[], int len);

int main()
{
    // initialize array and variables
    int array1[SIZE];
    size_t i;
    size_t j;

    // all elements initialized to 1
    for (i = 0; i < SIZE; i++) {
        array1[i] = 1;
    }

    for (i = 2; i < SIZE; i++) {
        if (array1[i] == 1)
            for (j = i + 1; j < SIZE; j++) {
            // check if the number is already not prime
                if (array1[j] == 0)
                    continue;
                // check if it's prime
                else if (j % i == 0) {
                    array1[j] = 0;
                }
            }// end inner for
        }// end outer for

    // call for printNumbers function to display results
    printNumbers(array1, SIZE);

} // end main

// function for displaying prime numbers
void printNumbers(int array2[], int len)
{
    size_t i;

    printf("Prime numbers up to %d:\n", SIZE);
```



```
    for (i = 2; i < len; i++) {
        if (array2[i] == 1)
            printf("%d ", i);
    }
}// end printNumbers
```

## Output

- The prime numbers between 1 and 999 are printed as given below.



```
Prime numbers up to 1000:
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 11
3 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239
 241 251 257 263 269 271 277 281 283 293 307 311 313 317 331 337 347 349 353 359 367 373
379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463 467 479 487 491 499 503 5
09 521 523 541 547 557 563 569 571 577 587 593 599 601 607 613 617 619 631 641 643 647 65
3 659 661 673 677 683 691 701 709 719 727 733 739 743 751 757 761 769 773 787 797 809 811
 821 823 827 829 839 853 857 859 863 877 881 883 887 907 911 919 929 937 941 947 953 967
971 977 983 991 997
```