*prime numbers*



```
void prime_test(int number)
{

}
```

2 3 5 7 11 13 17 19

1001
Is there any reason to try to devide 1001 by 700?
by 500

by sqrt(1001)~33*33

by sqrt(1001)~33 1001~33*33
let 1001 not devided any numbers before 33
let 1001 devided by 59, why it is impossible?
if 1001 devided by 59 then 1001=59*x
x < 33

```
void checkPrime(int number) {
  int flag = 0;
  for (int i = 2; i < number; i++) {
     if (number % i == 0) {
        flag = 1;
        std::cout << "Number is not prime" << std::endl;
        break;
     }
  }
  if (flag == 0) {
     std::cout << "Number is a prime number." << std::endl;
  }
}
```

```
void checkPrime(int number) {
  int flag = 0;
  for (int i = 2; i <= number / 2; i++) {
     if (number % i == 0) {
        flag = 1;
        std::cout << "Number is not prime" << std::endl;
        break;
     }
  }
  if (flag == 0) {
     std::cout << "Number is a prime number." << std::endl;
  }
}
```

```
void checkPrime(int number) {
  int flag = 0;
  double root= sqrt(number);
  for (int i = 2; i <=root; i++) {
     if (number % i == 0) {
        flag = 1;
        std::cout << "Number is not prime" << std::endl;
        break;
     }
     std::cout << i << " " << std:: endl;
  }
  if (flag == 0) {
     std::cout << "Number is a prime number." << std::endl;
  }
}
```

**HOME WORK**

**void factorisation(int number)**

**{**

**}**

**//12 =2*2*3**
**//36 =2*2*3*3**
**//182=7*13*2**

12
3.5
6
2.5
3
1.7

```
void factorNumber(int number) {
  int flag = 0;
  double root = sqrt(number);
  for (int i = 2; i < root; i++) {
     if (number % i == 0) {
        flag = 1;
        std::cout << i << " ";
        number = number / i;
        i--;
     }
  }
  std::cout << std::endl;
}
```

100 digits * 100 digits=200 digits
sqrt(200 digits)=100 digits=10^100
10 billions operations sec - home computer
1 year = 31 000 000 sec

10^100/10^10=10^90 sec=
=10^90 sec / 3*10^7=
=3 * 10^82 years

3 * 10^82 years/10^710^75 industrial

10^15 universe

```
void factorNumber(int number) {
  int flag = 0;
  double root = sqrt(number);
  for (int i = 2; i <= root; i++) {
     if (number % i == 0) {
        flag = 1;
        std::cout << i << " ";
        number = number / i;
        root = sqrt(number);
        i--;
     }
  }
  std::cout << number << " ";
  std::cout << std::endl;
}
```