Contents

1 Graph

1.1 C129

```cpp
#include <bits/stdc++.h>

using namespace std;
char oil[100][100] = {0};
int m, n;

void dfs( int i, int j )
{
    oil[i][j] = '*';
    if( oil[i-1][j-1] == '@' )
    {
        if( i-1 >= 0 && j-1 >= 0 )
        {
            oil[i-1][j-1] = '*';
            dfs( i-1, j-1 );
        }
    }
    else if( oil[i-1][j] == '@' )
    {
        if( i-1 >= 0 )
        {
            oil[i-1][j] = '*';
            dfs( i-1, j );
        }
    }
    else if( oil[i-1][j+1] == '@' )
    {
        if( i-1 >= 0 && j+1 <= n )
        {
            oil[i-1][j+1] = '*';
            dfs( i-1, j+1 );
        }
    }
    else if( oil[i][j-1] == '@' )
    {
        if( j-1 >= 0 )
        {
            oil[i][j-1] = '*';
            dfs( i, j-1 );
        }
    }
    else if( oil[i][j+1] == '@' )
    {
        if( j+1 <= n )
        {
            oil[i][j+1] = '*';
            dfs( i, j+1 );
        }
    }
    else if( oil[i+1][j-1] == '@' )
    {
        if( i+1 <= m && j-1 >= 0 )
        {
            oil[i+1][j-1] = '*';
            dfs( i+1, j-1 );
        }
    }
    else if( oil[i+1][j] == '@' )
    {
        if( i+1 <= m )
        {
            oil[i+1][j] = '*';
            dfs( i+1, j );
        }
    }
    else if( oil[i+1][j+1] == '@' )
    {
        if( i+1 <= m && j+1 <= n )
        {
            oil[i+1][j+1] = '*';
            dfs( i+1, j+1 );
        }
    }
}

int main(void)
{
    while( cin >> m >> n )
    {
        int ans = 0;
        if(( m == 0 ) && ( n == 0 ))
        {
            break;
        }
        else
        {
            for( int i = 0 ; i < m ; i++ )
            {
                for(int j = 0 ; j < n ; j++ )
                {
                    cin >> oil[i][j];
                }
            }
        }
        for( int i = 0 ; i < m ; i++ )
        {
            for(int j = 0 ; j < n ; j++ )
            {
                if( oil[i][j] == '@' )
                {
                    dfs( i, j);
                    ans++;
                }
            }
        }
        cout << ans <<endl;
    }
    return 0;
}
```

1.2 11935

```cpp
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int num, flag = 1;
    cin >> num;
    while( num > 0 )
    {
        int n, ans = 0;
        char map[100][100] = {0};
        cin >> n;
        for( int i = 0 ; i < n ; i++ )
        {
            for(int j = 0 ; j < n ; j++ )
            {
                cin >> map[i][j];
            }
```

```cpp
20            }
21        for( int i = 0 ; i < n ; i++ )
22        {
23            for(int j = 0 ; j < n ; j++ )
24            {
25                if( map[i][j] == 'x' )
26                {
27                    ans++;
28                }
29            }
30        }
31        cout << "Case " << flag << ": " << ans <<endl;
32        num--;
33        flag++;
34    }
35    return 0;
36 }
```

2 Numbers

2.1 CongruenceEquation

```cpp
1 #include <bits/stdc++.h>
2
3 using namespace std;
4
5 long long Mode(long long a, long long n, long long m)
6 {
7     long long sum = 1;
8     for( ; n ; n >>= 1 )
9     {
10        if( n & 1 )
11        {
12            sum = ( sum * a ) % m;
13        }
14        a = ( a * a ) % m;
15    }
16    return sum;
17 }
18
19 int main(void)
20 {
21    int a, b, p, x, ans = 0;
22    cin >> a >> b >> p >> x;
23    for( int i = 1 ; i < x + 1 ; i++ )
24    {
25        int n;
26        n = i % p;
27        n = n * Mode( a, i, p);
28        if( n % p == b % p )
29        {
30            ans++;
31        }
32    }
33    cout << ans <<endl;
34    return 0;
35 }
```

3 PD practice

3.1 practice1

```java
1 package com.company;
2 import java.util.Scanner;
3 public class Main {
4
5     public static void main(String[] args) {
6         Scanner scanner = new Scanner(System.in);
7         int n = scanner.nextInt();
8         int m = n-1;
9         for( int i = 1 ; i <= 2*n-1 ; i=i+2 ) {
```

```java
10            for( int j = m ; j > 0 ; j-- ) {
11                System.out.print(" ");
12            }
13            m--;
14            for (int t = 0; t < i; t++) {
15                System.out.print("*");
16            }
17            System.out.println();
18        }
19    }
20 }
21 }
```

3.2 practice2

```java
1 package com.company;
2
3 public class Main {
4
5     public static void main(String[] args) {
6         for( int i = 1 ; i < 10 ; i++ ) {
7             for( int j = 1 ; j < 10 ; j++ ) {
8                 System.out.print( i+ " * "+ j+ " =");
9                 if( i * j < 10 ){
10                    System.out.print("  ");
11                }
12                else{
13                    System.out.print(" ");
14                }
15                int ans = i * j;
16                if( j == 9 )
17                {
18                    System.out.print(ans);
19                }
20                else
21                {
22                    System.out.print( ans+ " " );
23                }
24            }
25            System.out.println();
26        }
27
28    }
29 }
```

3.3 practice3

```java
1 package com.company;
2 import java.util.Scanner;
3 public class Main {
4
5     public static void main(String[] args) {
6         Scanner scanner = new Scanner(System.in);
7         int n = scanner.nextInt();
8         if( n >= 2 ){
9             System.out.print(2);
10        }
11        for (int j = 3; j < n ; j++)
12        {
13            boolean answer = true;
14            for (int i = 2; i <= Math.sqrt(j) ; i++)
15            {
16                if (j % i == 0)
17                {
18                    answer = false;
19                    break;
20                }
21            }
22            if (answer)
23            {
24                System.out.print( " "+ j );
25
26            }
```

```
27          }
28          System.out.println();
29      }
30 }
```

3.4 practice4

```
1  package com.company;
2  import java.util.Scanner;
3  public class Main {
4      private static String str;
5      public static void main(String[] args) {
6          Scanner scanner = new Scanner(System.in);
7          while( scanner.hasNext() ) {
8              str = scanner.next();
9              if(str.equals("0")){
10                 break;
11             }
12             int tot1 = 0, tot2 = 0;
13             for (int i = 0; i < str.length(); i += 2)
                   {
14                 tot1 = tot1 + str.charAt(i) - '0';
15             }
16             for (int j = 1; j < str.length(); j += 2)
                   {
17                 tot2 = tot2 + str.charAt(j) - '0';
18             }
19             if( tot1 > tot2 ){
20                 judgment( tot1, tot2 );
21             }
22             else{
23                 judgment( tot2, tot1 );
24             }
25         }
26     }
27
28     public static void judgment( int a, int b ){
29         int judge = a - b;
30         if( judge % 11 == 0 ){
31             System.out.println( str +" is a multiple
                   of 11." );
32         }
33         else{
34             System.out.println( str +" is not a
                   multiple of 11." );
35         }
36     }
37 }
```

3.5 HW1

```
1  package com.company;
2  import java.math.BigDecimal;
3  import java.util.Scanner;
4  import java.util.StringTokenizer;
5
6  public class Main {
7      public static void main(String[] args) {
8          Scanner scanner = new Scanner(System.in);
9          String str = scanner.next();
10         BigDecimal ans = new BigDecimal(0);
11         String[] num = new String[50];
12         String[] sign = new String[50];
13
14         int flag = 0, flagg = 0;
15
16         StringTokenizer token = new
                   StringTokenizer(str,"+-*/%,()",true);
17         while(token.hasMoreTokens()){
18             String str1 = token.nextToken();
19             if( Character.isDigit(str1.charAt(0))){
20                 num[flag] = str1;
21                 if( flag > 0 ){
```

```
22                 System.out.print(" ");
23             }
24             System.out.print(num[flag]);
25             flag++;
26         }
27         else{
28             sign[flagg] = str1;
29             flagg++;
30         }
31     }
32     System.out.println();
33
34     for(int i = 0 ; i < sign.length ; i++ ){
35         if(sign[i] == null){
36             break;
37         }
38         else if(i > 0){
39             System.out.print(" ");
40         }
41         System.out.print(sign[i]);
42     }
43     System.out.println();
44
45     for( int i = 0 ; i < num.length ; i++ ){
46         if( num[i] == null ){
47             break;
48         }
49         BigDecimal cal = new BigDecimal(num[i]);
50         ans = ans.add(cal);
51     }
52     System.out.printf("%.3f",ans);
53     System.out.println();
54     }
55 }
```

3.6 primenumber

```
1  package com.company;
2  import java.lang.Math;
3  import java.util.Scanner;
4
5  public class Main {
6      public static void main(String[] args) {
7          Scanner scanner = new Scanner(System.in);
8          int num = scanner.nextInt();
9          int[] arr = new int[1000];
10         int flag = 0;
11         for (int j = 2; j < num ; j++)
12         {
13             boolean answer = true;
14             for (int i = 2; i <= Math.sqrt(j); i++)
15             {
16                 if (j % i == 0)
17                 {
18                     answer = false;
19                     break;
20                 }
21             }
22             if (answer)
23             {
24                 arr[flag] = j;
25                 flag++;
26             }
27         }
28         for(int i = 0 ; i < flag ; i++){
29             int temp = i+1;
30             System.out.print(arr[i]);
31             if( temp % 10 != 0 && i != flag -1){
32                 System.out.print(" ");
33             }
34
35             if( i == flag -1 && temp % 10 != 0){
36                 System.out.println();
37             }
38
39             if( temp % 10 == 0){
```

```
40            System.out.println();
41         }
42      }
43   }
44 }
```