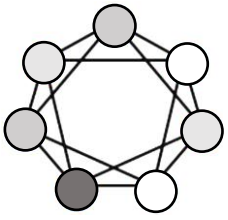


Tutorial 1

Shu Wang

2024/9/10





How to write a Java program

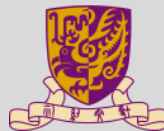
Let's see the general structure of a java code

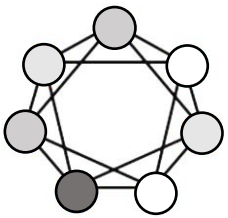
```
import java.util.*;

public class Sample { // define a main class
    public static void main(String[] args) { // main function
        /* your code here */
    }
    public static void my_fun(int a1, float a2, double a3) { }
}

class MyClass { // a self-defined class
    public int num_1;
    private double num_2;

    MyClass() { }
    public double getNum2() { return num_2; }
    public void setNum2(double new_val) { num_2 = new_val; }
}
```





```
import java.util.*; // import statement: import every class in java.util package

// define a main class:
// the class should be public and the class name
// should be the same as the corresponding file name
public class Sample {
    // there should be a `public` and `static` main function inside the main class
    public static void main(String[] args) {
        /* your code here */
    }

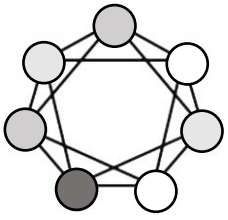
    // If you define new functions used in the main function,
    // state them as `static` function
    // NOTE: java is statically typed,
    //       so be sure to declare the return type / classes and argument types / classes.
    public static void my_fun(int a1, float a2, double a3) { }
}

// If you need self-defined classes,
// please define it as below.
// NOTE: self-defined classes should not be declared as 'public'
class MyClass {

    // attributes
    public int num_1;
    private double num_2;

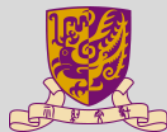
    // initialization
    MyClass() { }

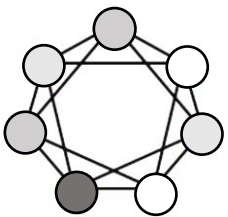
    // methods (here set and get, for example)
    public double getNum2() { return num_2; }
    public void setNum2(double new_val) { num_2 = new_val; }
}
```



Sample Program: Hello World

```
1 public class Hello {  
2     public static void main(String[] args) {  
3         System.out.println("hello, world!");  
4     }  
5 }  
6  
7  
8
```





Compile & Run your Java program using command line

Take “Hello.java” as example

– (commands also work on MacOS)

1. Compile and generate the “Hello.class” file.
2. Run your code

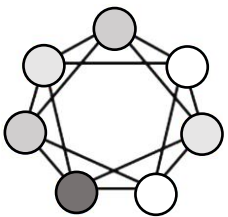
The screenshot shows an IDE with a project named 'tutorial1'. The 'src' folder contains 'Hello.java', 'Main.java', and 'Sample.java'. The 'Hello.java' file is open, showing the following code:

```
1 public class Hello {  
2     public static void main(String[] args) {  
3         System.out.println("hello, world!");  
4     }  
5 }
```

The terminal window shows the following commands and output:

```
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src> ls  
  
目录: D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src  
  
Mode                LastWriteTime         Length Name  
----                -  
-a---l            2024/1/9 22:37             128 Hello.java  
-a---l            2024/1/9 22:21             778 Main.java  
-a---l            2024/1/9 22:29             241 Sample.java  
  
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src> javac .\Hello.java 1  
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src> ls  
  
目录: D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src  
  
Mode                LastWriteTime         Length Name  
----                -  
-a----            2024/1/9 22:39             417 Hello.class  
-a---l            2024/1/9 22:37             128 Hello.java  
-a---l            2024/1/9 22:21             778 Main.java  
-a---l            2024/1/9 22:29             241 Sample.java  
  
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src> java Hello 2  
hello, world!  
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src>
```





Compile & Run your Java program using command line

Alternative: (use when the program contains one file only)

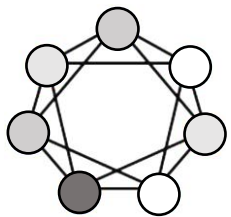
```
Terminal Local × + ∨
PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src\tmp> ls

目录: D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src\tmp

Mode                LastWriteTime         Length Name
----                -
-a---l            2024/1/9 22:37             128 Hello.java

PS D:\ASUS\OneDrive - CUHK-Shenzhen\TA\3100-23S\tut1\tutorial1\src\tmp> java .\Hello.java
hello, world!
```





hello, world

✓ hello, world

Please output "hello, world" (no quotations)

Report an issue

Submit solution

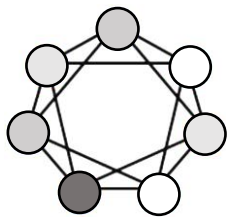
My submissions
All submissions
Best submissions

Manage tickets
Edit problem
Edit test data
Manage submissions
Clone problem

✓ Points: 1
⌚ Time limit: 1.0s
≡ Memory limit: 256M

✎ Author:
Enderturtle
> Problem type
≡ Judges:
Gensokyo, Marisa, Reimu,
Reisen, Youmu

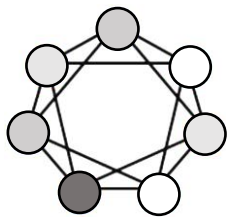




Solution

```
public class Hello {  
    public static void main(String[] args) {  
        System.out.println("hello, world");  
    }  
}
```





A+B problem

✓ A+B problem

Description

A+B problem

Input

The input is in two lines. The first line contains the value of integer a ($0 < a < 10$) and the second line contains the value of integer b ($0 < b < 10$)

Output

The output is a line containing the value of $a + b$

Sample input

1
2

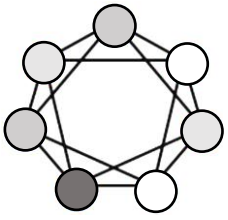
Copy

Sample output

3

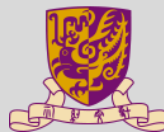
Copy

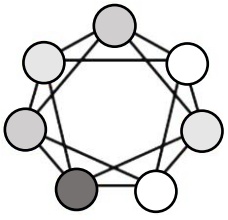




Solution

```
import java.util.*;
public class AplusB {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int a = input.nextInt();
        int b = input.nextInt();
        input.close();
        System.out.println(a + b);
    }
}
```





Fibonacci sequence

Fibonacci sequence

Description

Fibonacci sequence.

Fibonacci: $f(0) = 1$ $f(1) = 1$ $f(n) = f(n - 1) + f(n - 2)$ $n \geq 2$

Since $f(n)$ can be really big, so you only need to output $f(n) \bmod 998244353$

Input

The input is an integer n ($0 \leq n \leq 1000$).

Output

The output is a line containing the value of $f(n) \bmod 998244353$

Sample input

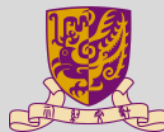
4

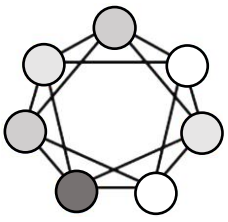
Copy

Sample output

5

Copy





Solution

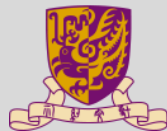
```
import java.util.*;

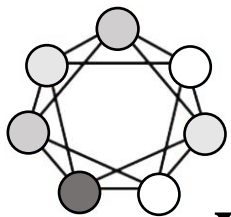
public class Fibonacci {
    static final int mod = 998244353; // mod constant

    public static int getFibLoop(int n) {
        // get fibonacci by loop
        if(n == 1 || n == 0)
            return 1;
        int f_prev = 1, f_now = 1, f_next;
        for(int i = 2; i <= n; i++) {
            f_next = (f_prev + f_now) % mod;
            f_prev = f_now;
            f_now = f_next;
        }
        return f_now;
    }

    public static int getFibRec(int n) {
        // calculate fibonacci by recursion
        if(n == 1 || n == 0)
            return 1;
        return (getFibRec(n - 1) + getFibRec(n - 2)) % mod;
    }

    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        input.close();
        int ans = getFibRec(n);
        System.out.println(ans);
    }
}
```





CUHKSZ Online Judge

Website [Campus only] <http://oj.cuhk.edu.cn>

- No need to register: we have registered for you, but you have to change your password to login.
- **Note: the OJ we use is a totally new one, different from the previous OJ.**

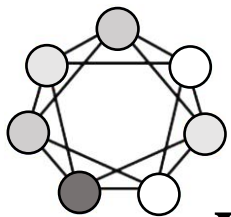
Why use the OJ?

- Evaluate the coding assignments
- Easily get the feedback (both for you and TA)
- Enjoy programming

When grading assignments, the OJ only collects the score from the last submission.

PS: Remember to submit your highest-scoring program as the final submission.

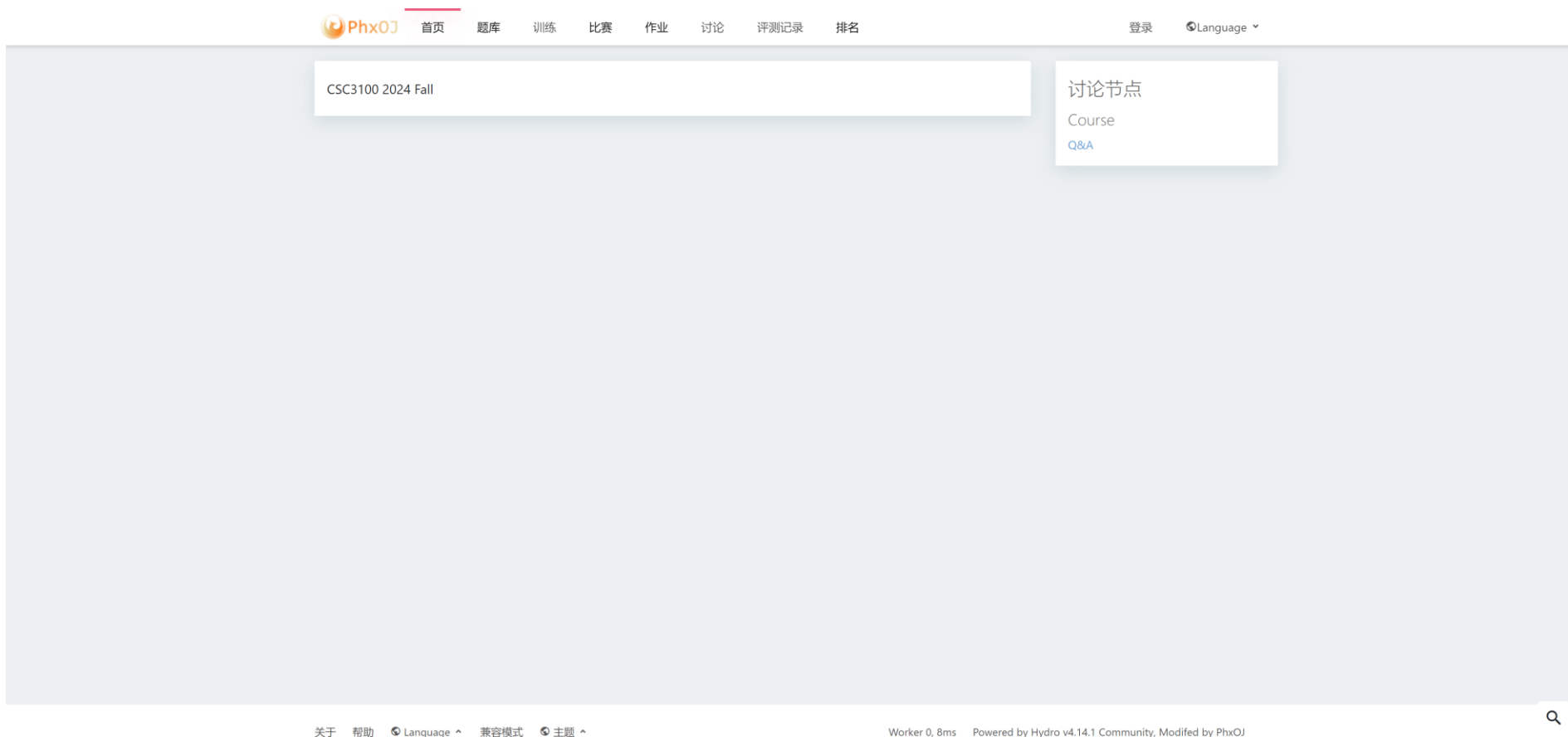


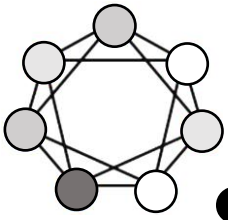


Guidelines for starting using OJ

Website [Campus only] http://oj.cuhk.edu.cn/d/csc3100_2024_fall/

- Click “Login”





Guidelines for starting using OJ

- Click “Forgot password or username?”;

CLOSE

SIGN IN

Using your PhxOJ universal account

Username

Password

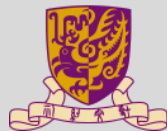
☐ Remember me

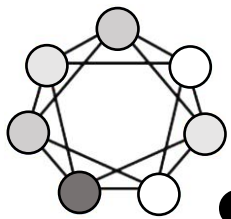
Login

[Forgot password or username?](#)

Don't have an account?

By signing up a PhxOJ universal account, you can submit code and join discussions in all online judging services provided by us.





Guidelines for starting using OJ

- The email is: studentID@link.cuhk.edu.cn, and click “Send Password Reset Email”;

PhxOJ Home Problem Set Training Contest Homework Discussion Record Ranking Login Language

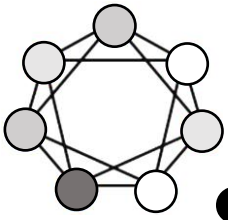
Lost Password

Email

Send Password Reset Email

About Help Language Legacy mode Theme Worker 0, 12ms Powered by Hydro v4.10.3 Community, Modified by PhxOJ





Guidelines for starting using OJ

- Check your email box, and click the reset link;



st_oj@link.cuhk.edu.cn

收件人: 你



Lost Password - PhxOJ

Hello, TestStudent! You can click following link to reset the password of your PhxOJ account:

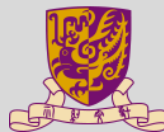
<http://10.26.200.14/lostpass/>

This email was sent by PhxOJ automatically, and please do not reply directly.

This email was requested from

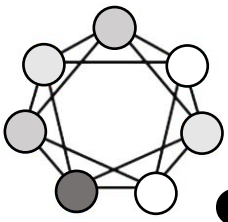
← 答复

→ 转发



香港中文大學(深圳)

The Chinese University of Hong Kong, Shenzhen



Guidelines for starting using OJ

- Fill in new password, and click “Reset Password”;

PhxOJ Home Problem Set Training Contest Homework Discussion Record Ranking Login Language

Lost Password

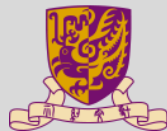
Username
TestStudent

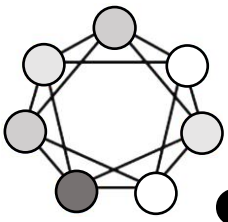
Password

Repeat Password

Reset Password

About Help Language Legacy mode Theme Worker 0, 16ms Powered by Hydro v4.10.3 Community, Modified by PhxOJ





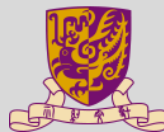
Guidelines for starting using OJ

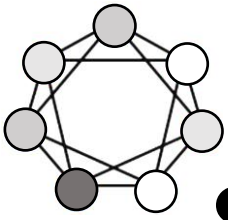
- Click “Homework” and choose “Claim Homework”;

The screenshot shows the PhxOJ website interface. At the top, there is a navigation bar with links: Home, Problem Set, Training, Contest, Homework (highlighted with a red underline), Discussion, and More. On the right side of the navigation bar, there are user-related links: CSC2003 2024 Spring and TestStudent. Below the navigation bar, the main content area is divided into two columns. The left column contains a 'Homework Introduction' section with the text 'Try to submit a program!' and a 'Problem' section with a large placeholder image and the text 'Please claim the assignment to see the problems.' The right column contains a sidebar menu with the following items: '+ Claim Homework' (highlighted with a red arrow), 'Scoreboard', and 'Help'. Below the sidebar menu, there is a table with the following data:

Status	Live...
Problem	1
Open Since	2024-1-9 0:00
Deadline	2024-1-21 23:59
Extension	48 hour(s)

At the bottom of the page, there is a footer with links: About, Help, Language, Legacy mode, and Theme. On the right side of the footer, there is a search icon. In the center of the footer, there is text: Worker 0, 15ms Powered by Hydro v4.10.3 Community, Modified by PhxOJ.





Guidelines for starting using OJ

- Choose the problem you want to submit;

The screenshot shows the PhxOJ website. The top navigation bar includes links for Home, Problem Set, Training, Contest, Homework (which is highlighted), Discussion, and More. On the right, there are dropdown menus for 'CSC2003 2024 Spring' and 'TestStudent'.

The main content area is divided into two columns. The left column has a 'Homework Introduction' section with the text 'Try to submit a program!' and a 'Problem' section containing a table. The right column has a 'Scoreboard' section with links for 'My Recent Submissions' and 'Help', and a 'Status' section with details about the current problem.

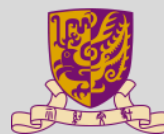
Status	Last Submit At	Problem
No Submissions	-	P10000 HelloWorld

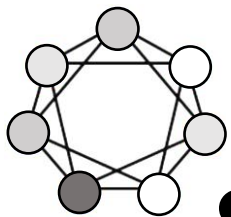
A red arrow points to the 'P10000' problem entry in the table.

The sidebar on the right shows the following information:

- Scoreboard
- My Recent Submissions
- Help
- Status: Live...
- Problem: 1
- Open Since: 2024-1-9 0:00
- Deadline: 2024-1-21 23:59
- Extension: 48 hour(s)

The footer contains links for About, Help, Language, Legacy mode, and Theme. It also mentions 'Worker 0, 21ms' and 'Powered by Hydro v4.10.3 Community, Modified by PhxOJ'.





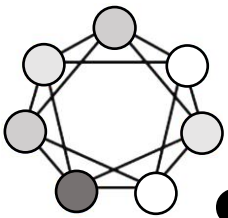
Guidelines for starting using OJ

- View the description of the problem here;

The screenshot shows the PhxOJ website interface. At the top, there is a navigation bar with links: Home, Problem Set, Training, Contest, Homework, Discussion, and More. The user is logged in as 'TestStudent' and the current contest is 'CSC2003 2024 Spring'. The main content area displays the problem '#A. HelloWorld'. Below the problem title, there are tabs for 'Type: Default', '1000ms', and '256MiB'. The 'Description' section is highlighted with a red arrow. It contains the text 'Output "Hello, world!"'. Below this is the 'Format' section, which includes 'Input' (No input) and 'Output' (Hello, world!). The 'Samples' section shows a sample input 'Hello, world!' with a 'Copy' button. The 'Limitation' section states '1s, 1024KiB for each test case.' On the right side, there is a sidebar with a 'Submit' button, a 'CSC2003 Tutorial 1' section with a 'Claimed' status, and a table of contest statistics.

Status	Live...
Problem	1
Open Since	2024-1-9 0:00
Deadline	2024-1-21 23:59
Extension	48 hour(s)





Guidelines for starting using OJ

- Click “Submit”;

PhxOJ Home Problem Set Training Contest Homework Discussion More

CSC2003 2024 Spring TestStudent

#A. HelloWorld

Type: Default 1000ms 256MiB

简体中文 English

Description

Output "Hello, world!"

Format

Input

No input.

Output

Hello, world!

Samples

Hello, world! Copy

Limitation

1s, 1024KiB for each test case.

Open Scratchpad (Alt+E)

Submit

CSC2003 Tutorial 1

✓ Claimed

View Homework

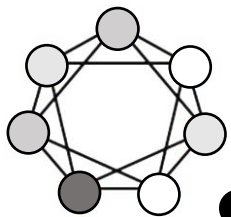
Scoreboard

My Recent Submissions

Help

Status	Live...
Problem	1
Open Since	2024-1-9 0:00
Deadline	2024-1-21 23:59
Extension	48 hour(s)





Guidelines for starting using OJ

- Choose “Java”, and paste your code here;

Submit to Judge

NOTE:
This page is only for pasting code from other sources.
To get a better editing experience, with code highlighting and test runs, please go back to the problem detail page and use 'Open Scratchpad' button.
[Dismiss](#) / [Don't show again](#)

Code language
Java

Code

Or upload a file: [选择文件](#) 未选择文件

Submit

HelloWorld
View Problem
Submit

CSC2003 Tutorial 1
Claimed

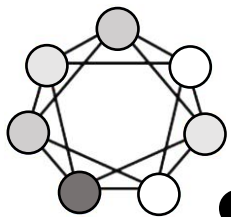
View Homework
Scoreboard
My Recent Submissions
Help

Status	Live...
Problem	1
Open Since	2024-1-9 0:00
Deadline	2024-1-21 23:59
Extension	48 hour(s)

About Help Language Legacy mode Theme

Worker 0, 26ms Powered by Hydro v4.10.3 Community, Modified by PhxOJ





Guidelines for starting using OJ

- Click “Submit”;
- Note: Change the public class name into “Main”!!!!!!

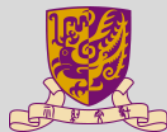
The screenshot shows the PhxOJ submission interface. At the top, there's a navigation bar with links like Home, Problem Set, Training, Contest, Homework, Discussion, and More. The main content area is titled 'Submit to Judge'. It includes a 'NOTE' section with instructions on using the Scratchpad. Below this is a 'Code language' dropdown set to 'Java'. A large text area for 'Code' contains the following Java code:

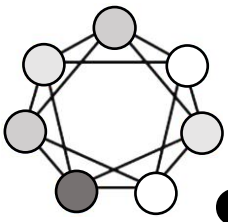
```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Hello, world!");  
    }  
}
```

Below the code area, there's a file upload section with a 'Submit' button. Two red arrows point to the 'Main' class name in the code and the 'Submit' button. On the right side, there's a sidebar for the 'HelloWorld' problem, showing a 'Submit' button, a 'CSC2003 Tutorial 1' section with a 'Claimed' status, and a table of submission statistics:

Status	Live...
Problem	1
Open Since	2024-1-9 0:00
Deadline	2024-1-21 23:59
Extension	48 hour(s)

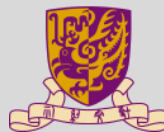
The footer contains links for About, Help, Language, Legacy mode, and Theme, along with technical details like 'Worker 0, 26ms' and 'Powered by Hydro v4.10.3 Community'.

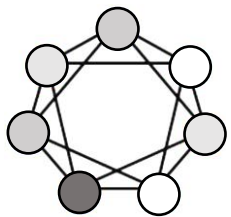




Guidelines for starting using OJ

- Each assignment is divided into a code section and a report section. The score displayed on the OJ system represents the grade for the code section of the assignment.
- OJ's criteria are very strict. That is, there **cannot be any formatting difference** between your program's output and the standard output, except for spaces and newlines at the end of the output;
- **Plagiarism is strictly forbidden**, and will cause “0” for the whole assignment; Using generative AI tools may also be considered plagiarism if the code you submit is identical to someone else's.
- You also need to **submit your code on blackboard**, along with the report (the format will be detailed in the assignment).
- **If you add this course lately and cannot find your account on OJ**, send a email to shuwang3@link.cuhk.edu.cn and describe your problem.





***Thank
You!***

