

# Assignment 3

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# Outline

- Deadline
- No Plagiarism
- Leave Comments
- Scoring
- Problem: <Pokemon Master Kiung>
- Submission
- Questions
- ***Two example (.txt) files are provided.***
- ***A demo video is offered.***



# Deadline

- Monday, December 11<sup>th</sup> 23:59 (LearnUs server time)
- No late submissions at all

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# No Plagiarism

- No Mercy.
- The punishment will be made to both
  - the person who copied the code, and the person who shared the code.
- Simply changing variable names and the order of code will not help you evade plagiarism detection.

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# Leave Comments

- Leave comments in your file for TAs to understand your code.
- If no comments in the file, there may be a reduction of points.

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# Scoring

- You should take care of your code not terminating by an issue in the middle of the loop
  - Scores will be given only by the final outputted file
- Example
  - 10 test cases (Total of 100 points)
  - If your code is correct for the first test case (O X O O O O X O O O) but terminates with an error in the second test case, only the first test case would be considered correct.
  - Be sure to thoroughly review your program's output to ensure the proper format.
- **The first testcase will be one of two examples in the distributed zip file.**
- No skeleton code
  - You have the freedom to implement it in any way you prefer.
- No testcase provided
  - You have to make your own testcase.

# Pokémon Master Kiung



Kiung, a legendary Pokémon Master, arrived in Pallet Town, eager to meet the renowned Prof. Oak. As he entered the Pokémon Professor's lab, he couldn't contain his excitement. Prof. Oak welcomed him with a warm smile.

"Ah, Kiung! It's wonderful to meet a young trainer with such enthusiasm," Prof. Oak said. "I hear you're on a journey to become a Pokémon Ph.D. To start your journey, I'll let you choose your first Pokémon companion. You can pick one from the following options: Pikachu, Dratini, Eevee, Charmander, or even Palkia."

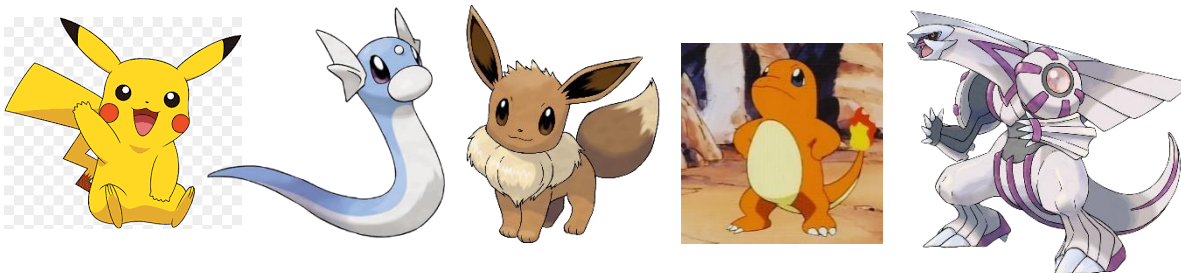
Kiung was thrilled by the choices laid out before him. Each of these Pokémon had its unique abilities and characteristics. He thought carefully and finally made his decision.

"I choose Charmander as my first Pokémon, Prof. Oak," Kiung said confidently.

Prof. Oak nodded approvingly. "An excellent choice, Kiung. Charmander is a Fire-type Pokémon with great potential. Now, since you've chosen Charmander, let's get you started with a practice battle to test your skills." Prof. Oak presented Kiung with four Poké Balls containing the Pokémon he didn't select - Pikachu, Dratini, Eevee, and Palkia. Kiung needed to choose one of them for the practice battle.

After a moment's contemplation, Kiung decided, "I'll go with Pikachu for the practice battle, Prof. Oak."

Prof. Oak handed Pikachu's Poké Ball to Kiung, and he felt the weight of responsibility as a Pokémon Trainer. With his newly acquired Charmander and Pikachu by his side, Kiung was ready to embark on his journey to become a Pokémon Ph.D trainer. The adventure had just begun, and many challenges and discoveries awaited him in the world of Pokémon.



# Pokémon Master Kiung

You have to implement a Pokémon battle.

To orchestrate a Pokémon battle, follow this sequence:

1. Select two distinct Pokémon.
2. Each Pokémon takes turns performing their skills to defeat each other.
  - It reduces the opponent's HP by the damage value of that skill.
3. If one Pokémon's HP reaches 0 or falls below, the battle ends.

Details will be described on the following pages.

2023000000 OOP Computer Science	
Pikachu (*) Type: Electric HP: 35	Dratini Type: Water HP: 41
(0) Tackle - Type: Normal - Damage: 4 - Count: 5(5)	(0) Wrap - Type: Normal - Damage: 4 - Count: 10(10)
(1) Glass Knot - Type: Glass - Damage: 8 - Count: 5(5)	(1) Aqua Tail - Type: Water - Damage: 3 - Count: 5(5)
(2) Thunderbolt - Type: Electric - Damage: 10 - Count: 5(5)	(2) Water Pulse - Type: Water - Damage: 13 - Count: 2(2)
(3) Megabolt - Type: Electric - Damage: 15 - Count: 3(3)	(3) Hyper Beam - Type: Normal - Damage: 20 - Count: 1(1)



# Specification 0: Types and Pokémons

There are 6 Pokémon types, and 6 Pokémon skill types.

Defender Pokémon Type Attack Skill type	Normal	Ground	Electric	Water	Glass	Fire
Normal	-	-	-	-	-	-
Ground	-	-	O	-	X	O
Electric	-	X	X	O	X	-
Water	-	O	-	X	X	O
Glass	-	X	-	O	X	X
Fire	-	-	-	X	O	X

- '-' means that this skill attack type is **effective** against the defender Pokémon type.
- 'O' means that this skill attack type is **super effective** against the defender Pokémon type.  
If the skill is super effective, the damage of the skill **increases by 5**.
- 'X' means that this skill attack type is **not very effective** against the defender Pokémon type.  
If the skill is not very effective, the damage of the skill **decreases by 3**.

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# Specification 0: Types and Pokémons

There are 5 Pokémon, and each Pokémon has its own Pokémon type and four skills.

MaxTry of a skill represent the maximum number of times that a skill can be used.

Pokémon No.0: Pikachu

- Pokémon Type: Electric
- Max HP: 35
- Skill 0:
  - Name: Tackle
  - Skill Type: Normal
  - Damage: 4
  - MaxTry: 5
- Skill 1:
  - Name: Glass Knot
  - Skill Type: Glass
  - Damage: 8
  - MaxTry: 5
- Skill 2:
  - Name: Thunderbolt
  - Skill Type: Electric
  - Damage: 10
  - MaxTry: 5
- Skill 3:
  - Name: Megabolt
  - Skill Type: Electric
  - Damage: 15
  - MaxTry: 3



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# Specification 0: Types and Pokémons

There are 5 Pokémon, and each Pokémon has its own Pokémon type and four skills.

MaxTry of a skill represent the maximum number of times that a skill can be used.

Pokémon No.1: Dratini

- Pokémon Type: Water
- Max HP: 41
- Skill 0:
  - Name: Wrap
  - Skill Type: Normal
  - Damage: 4
  - MaxTry: 10
- Skill 1:
  - Name: Aqua Tail
  - Skill Type: Water
  - Damage: 3
  - MaxTry: 5
- Skill 2:
  - Name: Water Pulse
  - Skill Type: Water
  - Damage: 13
  - MaxTry: 2
- Skill 3:
  - Name: Hyper Beam
  - Skill Type: Normal
  - Damage: 20
  - MaxTry: 1



---

# Specification 0: Types and Pokémons

There are 5 Pokémon, and each Pokémon has its own Pokémon type and four skills.

MaxTry of a skill represent the maximum number of times that a skill can be used.

Pokémon No.2: Eevee

- Pokémon Type: Normal
- Max HP: 55
- Skill 0:
  - Name: Tackle
  - Skill Type: Normal
  - Damage: 4
  - MaxTry: 5
- Skill 1:
  - Name: Sand Attack
  - Skill Type: Ground
  - Damage: 8
  - MaxTry: 3
- Skill 2:
  - Name: Bite
  - Skill Type: Normal
  - Damage: 12
  - MaxTry: 3
- Skill 3:
  - Name: Rain Dance
  - Skill Type: Water
  - Damage: 15
  - MaxTry: 1



---

# Specification 0: Types and Pokémons

There are 5 Pokémon, and each Pokémon has its own Pokémon type and four skills.

MaxTry of a skill represent the maximum number of times that a skill can be used.

Pokémon No.3: Charmander

- Pokémon Type: Fire
- Max HP: 39
- Skill 0:
  - Name: Tackle
  - Skill Type: Normal
  - Damage: 4
  - MaxTry: 5
- Skill 1:
  - Name: Flamethrower
  - Skill Type: Fire
  - Damage: 11
  - MaxTry: 5
- Skill 2:
  - Name: Dig
  - Skill Type: Ground
  - Damage: 7
  - MaxTry: 5
- Skill 3:
  - Name: Heat Wave
  - Skill Type: Fire
  - Damage: 14
  - MaxTry: 5



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# Specification 0: Types and Pokémons

There are 5 Pokémon, and each Pokémon has its own Pokémon type and four skills.

MaxTry of a skill represent the maximum number of times that a skill can be used.

Pokémon No.4: Palkia

- Pokémon Type: Water
- Max HP: 90
- Skill 0:
  - Name: Hydro Pump
  - Skill Type: Water
  - Damage: 12
  - MaxTry: 10
- Skill 1:
  - Name: Earth Power
  - Skill Type: Ground
  - Damage: 15
  - MaxTry: 10
- Skill 2:
  - Name: Surf
  - Skill Type: Water
  - Damage: 13
  - MaxTry: 10
- Skill 3:
  - Name: Spatial Rend
  - Skill Type: Normal
  - Damage: 30
  - MaxTry: 10



# Specification: 1. Choose Pokémon

Select two distinct Pokémon.

```
Choose a Pokemon(0~4): 0
Choose another Pokemon(0~4): 1
```

Be sure to print right whitespaces.

If you do not meet conditions, you can't get any score.

Prompt must work in following sequence:

1. Print "Choose a Pokemon(0~4):"
2. Take an input to choose your Pokémon.
3. Print "Choose another Pokemon(0~4):"
4. Take an input to choose a Pokémon for battle.

Condition

- All input in this step will be among 0, 1, 2, 3, or 4.

You don't take care of other cases.

- If two inputs are same, print "You have to choose Pokemons different from each other." and terminate it.

```
Choose a Pokemon(0~4): 0
Choose another Pokemon(0~4): 0
You have to choose Pokemons different from each other.
```

- If two inputs are different, go to next!

# Specification: 2. Battle Page

If you select two distinct Pokémons, print battle page.

In details:

1. Draw a row line with a length of 63 characters.

Each one is either dash('-'), Pipe('|') or plus('+').

Dash('-') represents the row line.

Pipe('|') represents the column line.

Plus('+') represents the point of intersection where two lines meet.

2. You have to print your id, name, and department.

Print a single space between each components.

Fill the rest with spaces after [your-dept] until the end of line.

If your full name is too long to print, it's acceptable to include only your last name.

Be sure to print right whitespaces.

If you do not meet conditions, you can't get any score.

It looks like:

```
+-----+
|Your-ID|Your-Name|Your-Dept|
```

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 2
+-----+
| 2023000000 00P Computer Science |
+-----+
| Pikachu (*) | Dratini |
| Type: Electric | Type: Water |
| HP: 35 | HP: 41 |
+-----+
| (0) Tackle | (0) Wrap |
| - Type: Normal | - Type: Normal |
| - Damage: 4 | - Damage: 4 |
| - Count: 5(5) | - Count: 10(10) |
| (1) Glass Knot | (1) Aqua Tail |
| - Type: Glass | - Type: Water |
| - Damage: 8 | - Damage: 3 |
| - Count: 5(5) | - Count: 5(5) |
| (2) Thunderbolt | (2) Water Pulse |
| - Type: Electric | - Type: Water |
| - Damage: 10 | - Damage: 13 |
| - Count: 5(5) | - Count: 2(2) |
| (3) Megabolt | (3) Hyper Beam |
| - Type: Electric | - Type: Normal |
| - Damage: 15 | - Damage: 20 |
| - Count: 3(3) | - Count: 1(1) |
+-----+
Choose a skill (0~3):
```



## Specification: 2. Battle Page

### 3. Print Pokémon info.

Print Pokémon's name, type, and current HP.

The Pokémon whose name is followed by "(\*)" is currently taking its turn.

Be sure to print right whitespaces.

If you do not meet conditions, you can't get any score.

It looks like:

```
+-----+
|Pikachu| |Dratini(*)|
|Type: Electric| |Type: Water|
|HP: 15| |HP: 1|
```

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 2
+-----+
| 20230000000 OOP Computer Science |
+-----+
|Pikachu (*)| |Dratini|
|Type: Electric| |Type: Water|
|HP: 35| |HP: 41|
+-----+
| (0) Tackle | | (0) Wrap |
| - Type: Normal | | - Type: Normal |
| - Damage: 4 | | - Damage: 4 |
| - Count: 5(5) | | - Count: 10(10) |
| (1) Glass Knot | | (1) Aqua Tail |
| - Type: Glass | | - Type: Water |
| - Damage: 8 | | - Damage: 3 |
| - Count: 5(5) | | - Count: 5(5) |
| (2) Thunderbolt | | (2) Water Pulse |
| - Type: Electric | | - Type: Water |
| - Damage: 10 | | - Damage: 13 |
| - Count: 5(5) | | - Count: 2(2) |
| (3) Megabolt | | (3) Hyper Beam |
| - Type: Electric | | - Type: Normal |
| - Damage: 15 | | - Damage: 20 |
| - Count: 3(3) | | - Count: 1(1) |
+-----+
Choose a skill (0~3):
```

# Specification: 2. Battle Page

## 4. Print Pokémon skill info.

Print the number, name, type, damage and count of Pokémon skills.

The spec of each skill can be found at the "Specification 0: Types and Pokémons" pages.

- Print Skill info like:

```
|(skill-number)|skill-name|
|Type:|skill-type|
|Damage:|skill-damage|
|Count:|skill-canTry(skill-maxTry)|
```

There is a single space before "(skill-number)".

There are 5 spaces before "- Type", "- Damage", and "- Count".

"skill-canTry" represents the skill's usage limit or how many times it can be employed.

Be sure to print right whitespaces.

If you do not meet conditions, you can't get any score.

It looks like:

```
+-----+
(skip)
|(3)|Megabolt| |(3)|Hyper|Beam|
|Type:|Electric| |Type:|Normal|
|Damage:|15| |Damage:|20|
|Count:|3(3)| |Count:|1(1)|
+-----+
```

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 2
+-----+
| 2023000000 OOP Computer Science |
+-----+
| Pikachu (*) | Dratini |
| Type: Electric | Type: Water |
| HP: 35 | HP: 41 |
+-----+
| (0) Tackle | (0) Wrap |
| - Type: Normal | - Type: Normal |
| - Damage: 4 | - Damage: 4 |
| - Count: 5(5) | - Count: 10(10) |
| (1) Glass Knot | (1) Aqua Tail |
| - Type: Glass | - Type: Water |
| - Damage: 8 | - Damage: 3 |
| - Count: 5(5) | - Count: 5(5) |
| (2) Thunderbolt | (2) Water Pulse |
| - Type: Electric | - Type: Water |
| - Damage: 10 | - Damage: 13 |
| - Count: 5(5) | - Count: 2(2) |
| (3) Megabolt | (3) Hyper Beam |
| - Type: Electric | - Type: Normal |
| - Damage: 15 | - Damage: 20 |
| - Count: 3(3) | - Count: 1(1) |
+-----+
Choose a skill (0~3):
```

# Specification: 2. Battle Page

So far you print the battle page like:

```
+-----+
| 2023000000 OOP Computer Science |
+-----+
| Palkia (*) | Dratini |
| Type: Water | Type: Water |
| HP: 90 | HP: 41 |
+-----+
| (0) Hydro Pump | (0) Wrap |
| - Type: Water | - Type: Normal |
| - Damage: 12 | - Damage: 4 |
| - Count: 10(10) | - Count: 10(10) |
| (1) Earth Power | (1) Aqua Tail |
| - Type: Ground | - Type: Water |
| - Damage: 15 | - Damage: 3 |
| - Count: 10(10) | - Count: 5(5) |
| (2) Surf | (2) Water Pulse |
| - Type: Water | - Type: Water |
| - Damage: 13 | - Damage: 13 |
| - Count: 10(10) | - Count: 2(2) |
| (3) Spatial Rend | (3) Hyper Beam |
| - Type: Normal | - Type: Normal |
| - Damage: 30 | - Damage: 20 |
| - Count: 10(10) | - Count: 1(1) |
+-----+
```

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 2
+-----+
| 2023000000 OOP Computer Science |
+-----+
| Pikachu (*) | Dratini |
| Type: Electric | Type: Water |
| HP: 35 | HP: 41 |
+-----+
| (0) Tackle | (0) Wrap |
| - Type: Normal | - Type: Normal |
| - Damage: 4 | - Damage: 4 |
| - Count: 5(5) | - Count: 10(10) |
| (1) Glass Knot | (1) Aqua Tail |
| - Type: Glass | - Type: Water |
| - Damage: 8 | - Damage: 3 |
| - Count: 5(5) | - Count: 5(5) |
| (2) Thunderbolt | (2) Water Pulse |
| - Type: Electric | - Type: Water |
| - Damage: 10 | - Damage: 13 |
| - Count: 5(5) | - Count: 2(2) |
| (3) Megabolt | (3) Hyper Beam |
| - Type: Electric | - Type: Normal |
| - Damage: 15 | - Damage: 20 |
| - Count: 3(3) | - Count: 1(1) |
+-----+
Choose a skill (0~3): █
```

# Specification: 3. Console

Now this is the time to take an input!

Prompt must work in following sequence:

1. Print "Choose a skill(0~3):"
2. Take an input to choose a skill.
3. Print "Pokémon-name used skill-name"
4. Print the effectiveness.

Print "The attack was super effective."

if chosen skill type is super effective  
against the opponent.

Print "The attack was effective."

if chosen skill type is effective  
against the opponent.

Print "The attack was not very effective."

if chosen skill type is not very effective  
against the opponent.

Condition

- All input in this step will be among 0, 1, 2, or 3.  
You don't take care of other cases.

Next Continued...

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 1
+-----+-----+
| 2023000000 00P Computer Science |
+-----+-----+
| Palkia (*) | Dratini |
| Type: Water | Type: Water |
| HP: 90 | HP: 41 |
+-----+-----+
| (0) Hydro Pump | (0) Wrap |
| - Type: Water | - Type: Normal |
| - Damage: 12 | - Damage: 4 |
| - Count: 10(10) | - Count: 10(10) |
| (1) Earth Power | (1) Aqua Tail |
| - Type: Ground | - Type: Water |
| - Damage: 15 | - Damage: 3 |
| - Count: 10(10) | - Count: 5(5) |
| (2) Surf | (2) Water Pulse |
| - Type: Water | - Type: Water |
| - Damage: 13 | - Damage: 13 |
| - Count: 10(10) | - Count: 2(2) |
| (3) Spatial Rend | (3) Hyper Beam |
| - Type: Normal | - Type: Normal |
| - Damage: 30 | - Damage: 20 |
| - Count: 10(10) | - Count: 1(1) |
+-----+-----+
Choose a skill (0~3): 2
Palkia used Surf.
The attack was not very effective.
```

# Specification: 3. Console

Print new battle page that contains the updated info.

- The count of used skill decreases by 1.
- The HP of the Opponent decreases by the damage of the skill.

*Don't forget the fact that  
if the skill is effective damage increases by 5  
and if the skill is not very effective damage decreases by 3.*

*Notice that the "(\*)" sign next to Pokémon name.*

And then, do it again until the battle ends!

- If one Pokémon's HP reaches 0 or falls below, the battle ends.

At the end of the battle, print the result and terminate the program.

- print "=====
- print "Match|Result:|Pokémon-name|defeats|Pokémon-name"

```
=====
Match Result: Pikachu defeats Dratini
```

```
Choose a Pokemon(0~4): 4
Choose another Pokemon(0~4): 1

+-----+
| 2023000000 OOP Computer Science |
+-----+
| Palkia (*) | Dratini |
| Type: Water | Type: Water |
| HP: 90      | HP: 41      |
+-----+
| (0) Hydro Pump | (0) Wrap |
|   - Type: Water |   - Type: Normal |
|   - Damage: 12  |   - Damage: 4    |
|   - Count: 10(10) |   - Count: 10(10) |
| (1) Earth Power | (1) Aqua Tail |
|   - Type: Ground |   - Type: Water  |
|   - Damage: 15   |   - Damage: 3    |
|   - Count: 10(10) |   - Count: 5(5)  |
| (2) Surf        | (2) Water Pulse |
|   - Type: Water  |   - Type: Water  |
|   - Damage: 13   |   - Damage: 13   |
|   - Count: 10(10) |   - Count: 2(2)  |
| (3) Spatial Rend | (3) Hyper Beam  |
|   - Type: Normal |   - Type: Normal |
|   - Damage: 30   |   - Damage: 20   |
|   - Count: 10(10) |   - Count: 1(1)  |
+-----+
Choose a skill (0~3): 2
Palkia used Surf.
The attack was not very effective.

+-----+
| 2023000000 OOP Computer Science |
+-----+
| Palkia | Dratini (*) |
| Type: Water | Type: Water |
| HP: 90      | HP: 31      |
+-----+
| (0) Hydro Pump | (0) Wrap |
|   - Type: Water |   - Type: Normal |
|   - Damage: 12  |   - Damage: 4    |
|   - Count: 10(10) |   - Count: 10(10) |
| (1) Earth Power | (1) Aqua Tail |
|   - Type: Ground |   - Type: Water  |
|   - Damage: 15   |   - Damage: 3    |
|   - Count: 10(10) |   - Count: 5(5)  |
| (2) Surf        | (2) Water Pulse |
|   - Type: Water  |   - Type: Water  |
|   - Damage: 13   |   - Damage: 13   |
|   - Count: 9(10) |   - Count: 2(2)  |
| (3) Spatial Rend | (3) Hyper Beam  |
|   - Type: Normal |   - Type: Normal |
|   - Damage: 30   |   - Damage: 20   |
|   - Count: 10(10) |   - Count: 1(1)  |
+-----+
Choose a skill (0~3): █
```

# Specification: 3. Console

As the game progresses, it's possible to reach a point where you have used a skill the maximum number of times, and you can no longer use it.

This means that you've exhausted the skill's usage limit and are unable to use it further.

In such a situation, if you choose the skill, nothing happens and the battle proceeds with the next turn.

Print "Pokémon-namefailed to performskill-name."

```
+-----+
| 2023000000 OOP Computer Science |
+-----+
| Palkia | Dratini (*) |
| Type: Water | Type: Water |
| HP: 70 | HP: 1 |
+-----+
| (0) Hydro Pump | (0) Wrap |
| - Type: Water | - Type: Normal |
| - Damage: 12 | - Damage: 4 |
| - Count: 10(10) | - Count: 10(10) |
| (1) Earth Power | (1) Aqua Tail |
| - Type: Ground | - Type: Water |
| - Damage: 15 | - Damage: 3 |
| - Count: 10(10) | - Count: 5(5) |
| (2) Surf | (2) Water Pulse |
| - Type: Water | - Type: Water |
| - Damage: 13 | - Damage: 13 |
| - Count: 9(10) | - Count: 2(2) |
| (3) Spatial Rend | (3) Hyper Beam |
| - Type: Normal | - Type: Normal |
| - Damage: 30 | - Damage: 20 |
| - Count: 9(10) | - Count: 0(1) |
+-----+
Choose a skill (0~3): 3
Dratini failed to perform Hyper Beam.
```

---

# Submission

- **Zip the folder** by following steps correctly

```
└─ ~/Desktop/oop/hello/hw3_2023000000 .....  
└─ > cd ..  
└─ ~/Desktop/oop/hello .....  
└─ > tar -zcvf hw3_2023000000.tar.gz hw3_2023000000/  
a hw3_2023000000  
a hw3_2023000000/main.cpp
```

- hw3\_studentId.tar.gz
  - Ex) hw3\_2016025314.tar.gz
- There is going to be reduction of points if not following the folder hierarchy as well
- If unzipped your submission .tar.gz file should follow the folder hierarchy below

Current directory

- hw3\_studentId.tar.gz
- hw3\_studentId
- **main.cpp**

---

# Questions

- Recommendation: Classsum in LearnUs
- You can also ask to TA: [kiung@yonsei.ac.kr](mailto:kiung@yonsei.ac.kr)
- Feel free to ask the ambiguous conditions of the assignment
- We are not going to answer
  - Questions not making sense
  - Questions related to the algorithm for solving the question
    - Ex) Why does my code not work?
  - Questions you can infer the answer if read this file thoroughly
  - Questions you can simply solve by googling
    - Ex) how do I make a folder on ubuntu? Why compile error?



---

# Appendix

- Zipping and unzipping the folder by tar command
  - <https://linuxize.com/post/how-to-extract-unzip-tar-gz-file/>
  - <https://www.cyberciti.biz/faq/how-do-i-compress-a-whole-linux-or-unix-directory/>