Assignment 1

PRINCESS GUINEVERE

Version 1.5

1. Introduction

Princess Guinevere, the daughter of King Leodegrance, is a wonderful beauty, the fiancée of the holy King Arthur. Rumors of her beauty crossed the borders of England, to the ears of the fierce dragon Bowser that reigns in the remote Koopa kingdom. Bowser then kidnapped Guinevere and brought her to Koopa, in order to force her to be his wife.

At this time, Arthur had just defeated Cerdic and stepped on the throne of England. Bewaring of the abduction of his lover, King Arthur first wanted to rescue Guinevere. But leaving England at this time meant that once again the kingdom was in a state of turmoil and sand, the stability and tranquility that Arthur had so difficult to create would probably disappear.

The Knights of the Round Table, led by Sir Lancelot, suggested that King Arthur should continue to remain stable in the English affairs. The rescue of Princess Guinevere will be undertaken by a Round Table knight.

Will King Arthur give up the kingdom for love, will the Knights of the Round Table overcome the formidable Bowser to rescue Princess Guinevere, all of which will be answered in this assignment.

2. Requirement

In this assignment, students will be provided with an input file containing information about the Knight of the Round Table to rescue Guinevere and travel data to the Kingdom of Koopa. The program will print on the screen the results of the Guinevere rescue process (will be presented in more details in Section 4).

3. Input

Program input is contained in a file named *input.txt*, containing the following information:

```
172 2 0 1 1
1 2 9 18 99
```
The Knight of the Round

The journey to Koopa

      Thus the input file will consist of at least two lines. The first line will describe the information of the knight to rescue Guinevere, formatted as follows.

HP level remedy maidenkiss pheonixdown

where:

- *HP*: The health point of the Knights of the Round Table, which is an integer between 99 and 999, and also is the *maxHP* of the knight.

- *level*: the level of the knight, which is an integer between 1..10

- *remedy*: The number of *Remed*y potions the knight carried, which is an integer between 0 and 99

- *maidenkiss*: The number of Maiden Kiss potions the knight carried, which is an integer between 0 and 99

- *phoenixdown*: The number of Phoenix Downs the knight has, which is an integer between 0 and 99

      From the second line of the input file it will describe the journey to Koopa. The journey to Koopa will consist of many events, indexed starting from 1. Each event will be described by a numeric value, called the *event code*. The corresponding meanings of each event are described in Table 1. The number of events is not fixed, may vary depending on

the test case. An event can occur many times. A maximum of 100 events will occur. If the number of events is large, the events may be displayed in multiple lines.

Example 1. With given input as

172 2 0 1 1

1 2 9 2 18 99

then the Round Table knight to rescure the princess will have a *HP* of 172, a level of 2. This knight has no Remedy, a MaidenKiss and a PhoenixDown. On the way to Koopa, the knight will meet the followingevents in turn:

Event 1: Meet MadBear's bear.

Event 2: Bandit encounter.

Event 3: Obtaining Mythril armor.

Event 4: Meeting another Bandit.

Event 5: Meeting the wizard Merlin.

Event 6: Meeting the dragon Bowser.

On the other hand, the knight's MaxHP is also 172 (meaning the knight's HP will never exceed 172 during the journey).

4. Output

The output of the screen shows the result of saving Princess Guinevere. If the knight fails, the screen will output **-1**. If the knight successfully rescues the princess, the screen will print the number *N* calculated as follows.

$$N = HP + level + \ remedy + maidenkiss + pheonixdown$$

Example 2. With the given input as

172 2 0 1 0

0

then the Round Table knight only encountered the fact that the dragon Bowser surrendered and returned the princess. The output is 172+2+0+1+0 = **175**.

Table 1 – Events in the journey to Koopa.

Event Code	Meanings
0	Bowser surrended and returned the princess
1	Meeting MadBear
2	Meeting Bandit
3	Meeting the bandit lord of LordLupin
4	Meeting Elf
5	Meeting Troll
6	Meeting Shaman
7	Meeting Siren Vajsh
8	Obtaining the Excalibur sword
9	Obtaining Mythril armor
10	Obtaining Excalipoor sword
11	Obtaining the mushroom of MushMario
12	Obtaining the mushroom of Fibonacci MushFib
13	Obtaining the ghost mushroom of MushGhost
14	Obtaining the special mushroom of MushKnight
15	Obtaining Remedy
16	Obtaining MaidenKiss
17	Obtaining PhoenixDown
18	Meeting Merlin the Wizard
19	Falling into the Abyss
20	Meeting the pricess Guinevere
21	Obtaining the magical wings of Lightwing
22	Meeting Odin the God
23	Obtaining Dragon Sword
99	Meeting Bowser

Depending on the events taking place on the street, the knight's *HP*, *level*, *remedy*, *maidenkiss* and *pheonixdown* will be changed, specifically described as follow.

a) If encountering event 0, the knight successfully rescues the princess, the knight's journey ends immediately, although there are still other events following this event in the input data.

Example 3. With the given input as

`172 2 0 1 0`

`0 10 5 15 21 99`

The output is $172+2+0+1+0 =$ **175**.

b) If encountering an event of from 1 to 5, the knight must engage with the corresponding opponent. Each opponent will also have their own *levelO* level. If the opponent are met as the ith event, the opponent's corresponding *levelO* will be calculated as follows.

$$b = \mathbf{i}\%10 \qquad\qquad (1)$$

$$levelO = \mathbf{i}{>}6?\ (b{>}5?\ b:5):b \qquad (2)$$

If the knight's *level* is higher than the opponent's *levelO*, the knight wins. When winning, a knight's *level* will be increased by 1 - however if the knight's *level* is already 10, the *level* cannot be increased.

If the knight's *level* is equal to *levelO*, the match is drawn, the knight continues the journey but the *level* is not increased.

If the knight's *level* is less than the opponent's *levelO*, the knight's *HP* will be calculated as follows.

$$HP = HP - damage \qquad\qquad (3)$$

damage will be calculated as

$$damage = baseDamage*levelO*10 \quad (4)$$

where *baseDamage* is depending on the opponent, described in Bảng 2.

Note that *HP* will always be an integer when calculating by formula (3). If the HP is less than or equal to 0 after calculating by formula (3) and the knight has no Phoenix Down, the program will end and the result will be -1. In case the knight has PhoenixDown, this treasure will be automatically used (*phoenixdown* will be reduced by 1), the knight's *HP* will be restored to the original *maxH*P and the knight continues his journey.

Table 2 – The baseDamage of opponents

Opponent	baseDamage
MadBear	1
Bandit	1.5
LordLupin	4.5
Elf	6.5
Troll	8.5

Example 4. With the given input of

```
172 2 0 1 0
5
```

Thus, in event 1, the knight met the giant demon *Troll*. Using formulas (1) and (2), Troll's *levelO* is 1. Since the knight's level is now 2, higher than Troll's *levelO*, the knight wins and the knight's *level* will be increased by 1 (become 3). With no further events to follow, the knight arrives at Koopa and successfully rescues the princess. The output is 172+**3**+0+1+0 = **176**.

Example 5. With the given input of

```
172 1 0 1 0
5 2
```

So, in event 1, the knight meets the giant demon Troll whose *levelO* is 1. Since the knight's level is now 1, the match is drawn and the knight moves to the next event. In event 2, the knight meets Bandit having *levelO* of 2. Since the knight's level is only 1, the knight loses, his HP will be 172-1.5 * 2 * 10 = 142. Here, since no longer event happened next, the knight reached Koopa and successfully rescued the princess, output is **142**+1+0+1+0 = **144**.

Example 6. With the given input of

```
152 1 0 1 0
3 5 7
```

Thus, after fighting with *LordLupine* in event 1, in the event of 2 the knight fightsTroll with *levelO* of 2. Since defeat, the knight's HP will thus become 152 - 8.5 * 2 * 10 = -18 <0. So the program ends and prints the value **-1** to the screen

Example 7. With the given input of

```
152 1 0 1 1
3 5
```

Similar to Example 6, after fighting with LordLupine in event 1, in the event 2 the knight fights Troll with l*evelO* of 2 and loses, the knight's HP will thus become 152 - 8.5 * 2 * 10 = -18 <0. Since the knight now has a PhoenixDown, this treasure will be automatically used, and the knight's *HP* will restore to its original *maxHP* value (152). Because there is no next event, the knight gets to Koopa and saves the princess, the result on the screen will be 152 + 1 + 0 + 1 + 0 = **154**.

c) If meeting the sorcerer Shaman (event code of 6), the knight will fight with Shaman. The fighting process is similar to that described in Section b. If the knight wins,

the knight's level will be increased by 2, but cannot be larger than 10. If the tie is drawn, the knight continues to move on. If lost, the knight will be turned into a tiny one in the next 3 events. In a tiny status, the knight's *HP* will be reduced by 1/5 (rounded to integer). If the knight's HP is less than 5, the knight's HP will be assigned as 1. No matter how much the knight's HP before being turned into a tiny one, after the tiny status expires, the knight's HP will be multiplied by 5 (if the *HP* is greater than *maxHP* now, *HP* will automatically decrease to *maxHP*).

As soon as the knight becomes tiny, if the knight has Remedy (*remedy>* = 1), the knight will automatically use this medicine and return to normal, then the knight's *remedy* will be reduced by 1. If the knight's *HP* is reduced to zero or below when the knight is in a tiny status and the knight has PhoenixDown to use, the knight will be freed from the tiny status, the *HP* will be restored to *maxHP*.

Example 8. With the given input of

```
152 1 0 0 0
```

```
4 6 5
```

After fighting with Elf in event 1, in the event 2 the knight fights Shaman with *levelO* as 2 and being turned into tiny due to lower level, the knight's *HP* will be then reduced to 30. At event 3 the knight fights with Troll with *levelO* of 3 and lose. The knight's *HP* then decreased to 30-8.5 * 3 * 10 = -225 <0. Since the knight does not have PhoenixDown, the program ends and prints on the screen the value **-1**.

Example 9. With the given input of

```
998 1 0 0 0
```

```
4 6 1 1 1
```

After fighting with Elf in event 1, in the event 2 the knight fights Shaman with *levelO* of 2 and being turned into tiny due to lower level, the knight's *HP* will be reduced to 199. At events 3,4,5 the knight continuously fights with MadBear with levelO respectively 3,4,5 and are lost. The knight's *HP* is reduced to 199-1 * (3 + 4 + 5) * 10 = 79. At this point, after 3 events, the knight's HP will automatically recover to 79 * 5 = 395. With no further events to follow, the knight arrives at Koopa and successfully rescues the princess. The value printed on the screen will be 395 + 1 + 0 + 0 + 0 = **396.**

Example 10. With the given input of

```
998 1 2 0 0
```

```
4 6 1
```

After fighting with Elf in event 1, in the event 2 the knight fights Shaman with *levelO* of 2 and being turned into tiny due to lower level, the knight's *HP* will be reduced to **199**. Because the knight has 2 remedies, an antidote will be automatically used, then the knight's *HP* will be 199 * 5 = 995. At event 3, the knight is defeated by MadBear having

levelO of 3 and the knight's *HP* is 995-1 * 3 * 10 = 965. So the result will be 965+ 1 + 1 + 0 + 0 = **967**.

d) If meeting Siren Vajsh (event code is 7), the knight will fight with Vajsh. The fighting process is similar to that described in section *b*. If the knight wins, the knight's *level* will be increased by 2 units, but cannot be greater than 10. If the tie is drawn, the knight continues to move on. If lost, the knight will be turned into a frog in the next 3 events. When turned into a frog, the knight's *level* will be reduced to 1. After turning back into a human, the knight's level will be restored to their original value before being turned into a frog (even when being turned into a frog, if the knight's level has increased, then when turning back to human, the knight level will return to his previous value before being changed into a frog).

Once turned into a frog, if the knight has MaidenKiss (*maidenkiss* >= 1), the knight will automatically use this medicine and return to normal, then the knight's *maidenkiss* will be reduced by 1. If the *HP* of the knight drops to zero or below when the knight turns into a frog and the knight has PhoenixDown to use, the knight will be turned back into a human and the knight's *HP* will recover to *MaxHP*.

When being turned into a tiny or a frog, if the knight picks up the corresponding antidote (Remedy or MaidenKiss), the antidote is automatically used immediately. Shaman and Vajsh will skip fighting with the knight if the knight is being turned into a tiny or frog.

Example 10b. With the given input of

998 1 0 0 0

4 6 7

After fighting with Elf in event 1, in event 2 knight fights Shaman with l*evelO* of 2 and being turned into tiny due to lower level, the knight's *HP* will be reduced to 199. At event 3, the knight meets Vajsh, because the knight is being turned into a tiny one, Vajsh will skip fighting with the knight. The output is 199+1+0+0+0=**200**.

e) If the Excalibur sword is obtained (event code is 8), the knight will replace the current sword with the Excalibur one. Using this sword, the knight defeated all MadBear, Bandit, LordLupine, Elf, and Trolls regardless of the opponent's *levelO*, even when the knight was turned into a tiny or frog; after each victory, the level of the knight will be increased accordingly as described in article *a*. The Excalibur does not work when the knight engages with Shaman and Vajsh, so the fighting will take place as described in c and d.

Example 11. With the given input of

```
172 1 2 0 0
```

```
8 5
```

In event 1, the knight picked up the Excalibur sword. In event 2, the knight met Troll having *levelO* of 2, although the knight's level was still 1 now, thanks to Excalibur, the knight still won and the level was increased to 2. The output is 172+2+2+0+0= **176**.

f) If Mythril armor is picked up (event code is 9), the knight's *HP* will never be reduced even if he is defeated by MadBear, Bandit, LordLupine, Elf, Troll **and Shaman or picks up the ghost mushroom of MushGhost.**

Example 12. With the given input of

```
172 1 2 0 0
```

```
9 5 8 4
```

In event 1, the knight picked up mythril armor. In event 2, the knight meets Troll having *levelO* of 2, although losing, his knight's HP is not reduced. In event 3, the knight picked up Excalibur, thus defeating an Elf whose levelO was 4 at event 4. The output is 172+2+2+0+0= **176**.

g) The knight can pick up the Excalipoor sword (event code is 10). The Excalipoor sword is a fake product after the famous Excalibur. If the knight is experienced knight (level 5 or higher), he will not be deceived and continue to use the current sword, otherwise the knight will discard the old sword and use Excalipoor. When using Excalipoor the knight will lose all battles regardless of the opponent's *levelO*.

Example 13. With the given input of

```
172 4 2 0 0
```

```
8 9 10 5
```

At the 1st event, the knight picked up the Excalibur sword, and at the second event, the knight picked up the mythril armor. In event 3, the knight picked up Excalipoor and due to his inexperience (level = 4), he used it instead of the old Excalibur. Going to event 4, the knights encounterd Troll with *levelO* of 4. Despite having level 4, the knight still lost because he was using Excalipoor. However, due to the mythril armor, the knight's HP remained unchanged. The output 172+4+2+0+0 = **178**.

h) If the knight picks up the power mushroom of MushMario, the knight's *HP* will be increased by 50 units, but if the *HP* is greater than *MaxHP*, *HP* will be automatically reduced to *MaxHP*.

.

Example 14. With the given input of

```
172 4 2 0 0
```

10 1 11

At event 1, the knight picked up the Excalipoor sword. At event 2, the knight was defeated by MadBear and the knight's *HP* was only 172-1 * 2 * 10 = 152. At event 3, the knight got MushMarrio and *HP* were increased to 152 + 50 = 202. However, because the knight's *MaxHP* was only 172, the knight's HP decreased to only 172. The output is 172+4+2+0+0= **178**.

i) If the knight picks up the Fibonacci mushroom MushFibo (event code is 12), the knight's *HP* will be increased to the nearest Fibonacci number, but if the HP increased is greater than *MaxHP*, the *HP* will be automatically reduced to *MaxHP*.

j) If the knight picks up the ghost mushroom of MushGhost (event code is 13), the knight's *HP* will be reduced by 50 units. However, if the knight's *HP* is less than 51, the knight's *HP* will be reduced to 1.

k) If the knight picks up a special mushroom of MushKnight (event code is 14), the knight's *MaxHP* will be increased by 50 units. If the *MaxHP* after its increase is greater than 999, the *MaxHP* will be automatically reduced to 999. At the same time, the knight's *HP* will be increased to this *MaxHP* value.

Example 15. With the given input of

```
172 4 2 0 0
```

10 1 14

At event 1, the knight picked up the Excalipoor sword. At event 2, the knight was defeated by MadBear and the knight's *HP* was only 172-1 * 2 * 10 = 152. Going to the event 3, the knight got MushKnight, then the knight's *MaxHP* would be 172 + 50 = 222, and the knight's HP will also increase to this value. The output is 222+4+2 = **228**.

l) If the knight picks up Remedy, MaidenKiss or PhoenixDown (event codes are 15,16 and 17 respectively), the *remedy*, *maidenkiss* and *phoenixdown* will be increased by 1. However, these numbers cannot be larger than 99.

m) If the knight meets Merlin the Wizard (event code is 18), Merlin will do the following (in the order listed):

- If the knight is being turned into a tiny or frog, Merlin will turn the knight back to normal.

- Increase a knight's level by 1, but the level is not more than 10.

- Knight's *HP* will be restored to *MaxHP*;

n) When the knight falls into the Abyss (event code is 19), if the knight's level is greater than or equal to 7, the knight will be able to jump off the abyss and continue on. Otherwise the program will terminate and print the value **-1** to the screen.

o) If the knight meets Princess Guinevere, who has just escaped from Bowser's castle on her own (event code is 20), the two will not have to continue going to Koopa but will return to England. They will encounter the same events but in reversed order. **Only in this case, the number of events can be more than 100.**

Example 16. With the given input of

`172 4 2 0 0`

1 4 20 3 4 5 6 7 8 9 10 11

At events 1 and 2, the knight defeated MadBear and Elf, so the level was increased to 6. In event 3, the knight met Guinevere. The two returned to England, so they would meet Elf and MadBear again, the knights would continue to defeat these two opponents, so the final level would be 8. The output is 172+8+2+0+0= **182**.

p) If the knight picks up the magical wings of Lightwing (event code 21) at the *i*-th event, the knight will automatically skip the next 3 events and move to the $i + 4$ event. If the number of events following event *i* is less than 3, the knight reaches Koopa and successfully rescues the princess. On the other hand, if among the next three events ($i + 1$, $i + 2$ and $i + 3$) there is an event of 0 (Bowser surrenders) or 20 (Guinevere escapes), the knight also accomplishes his mission the program prints the results to the screen as usual. Moreover, because the knight must face the events directly to test encouragement for solving the tiny curse (when the knight was defeated by Shaman) and the curse of frogs (when the knight was defeated by Siren Vajsh). So, even if the knight picking up the Lightwing and ignoring the next 3 event, this will not affect the process of resolving these 2 curses.

Example 17. With the given input of

`172 4 2 0 0`

21 4 18 3 2

In event 1, the knight picks up the magical wing of Lightwing, so it will be automatically moved to event 5 (skip events 2,3 and 4). Here, the knight defeated Bandit having *levelO* of 5, so his HP was only 172-1.5 * 5 * 10 = 97. The output is 97+4+2+0+0=**103**.

Example 18. With the given input of

```
172 4 2 0 0
```

21 99 99

In event 1, the knight picked up the wing of Lightwing, but there werr only 2 events after this event, the knight successfully rescued the princess, the output is 172+4+2+0+0=**178**.

Example 19. With the given input of

```
172 4 2 0 0
```

21 99 20 99 16 20 12

In event 1, the knight picked up the Lightwing wings, and moved to event 5 (picked up MaidenKiss). However, while flying to event 5, the knight meets Guinevere who escaped (event 3), the two fly straight to England. The output is 172+4+2+0+0=**178**.

q) If the knight meets Odin the God (event code is 22) and whatever the event is , Odin will help the knight in the next 3 events. Knights with Odin assistance will win in all fights (including when meeting Bowser), regardless of what weapon they are using or how high enemy's *levelO* is. **Moreover, Odin also helps the knight not to pick up the Excalipoor sword, not to eat MushGhost mushrooms and not to fall into the abyss**. Because Odin also had to battle on other battlefields, so Odin assist the knight in 3 events once time only. And the next time the knight meet Odin, nothing's gonna happen.

r) The knight can pick up the *Dragon Sword* (event code 23). The Dragon Sword can only be used by a *Dragon Knight*. If the knight is not a Dragon Knight, he will ignore this sword and reuse his sword (see also article x about the Dragon Knight)

s) The knight can meet Bowser himself in the journey (event code 99). Bowser can only be defeated by Arthur, Lancelot, Paladin with level 8 or higher, a Round Table knight with level 10 or a Dragon Knight with Dragon Sword (see more articles t, u, v, x about those mentioned characters). When Bowser is defeated, the knight's level will be assigned by 10. If losing to Bowser, the program terminates and prints -1 on the screen. Note that the knight continues the journey even after defeating Bowser.

t) If the knight's initial HP was 999, that knight was in fact King Arthur who gave up the throne of England to save Guinevere. Arthur will defeat all opponents in all fights. Arthur never picked up the Excalipoor sword.

Example 20. With the given input of

```
999 6 2 0 0
```

6 19

Arthur will defeat Shaman in event 1, then Arthur's level is increased to 8. In event 2, Arthur falls into the Abyss, however due to Arthur's level being 8, Arthur can jump out of the abyss. and continue the journey. The output is 999+8+2+0+0 = **1009**.

Example 21. With the given input of

```
999 6 2 0 0
19
```


In event 1, Arthur falls into the Abyss, however due to Arthur's level being 6, Arthur cannot jump out of the abyss. The output is **-1**.

u) If the knight's initial *HP* is 888, that knight is Lancelot. If Lancelot's level is odd, Lancelot's ability is the same as King Arthur's, otherwise Lancelot's ability is like an ordinary knight. However, Lancelot always beats Bowser at any level value..

Example 22. With the given input of

```
888 1 2 0 0
10 1 10 7 5
```


In event 1, Lancelot meets the Excalipoor sword. At this point, Lancelot's level is odd (1), Lancelot's behavior is similar to Arthur's so Lancelot will ignore not pick up this sword. In event 2, Lancelot defeated MadBear and was leveled up to 2. At event 3, Lancelot met the Excalipoor sword. Now Lancelot acts like a normal knight so he will pick up this sword. In event 4 Lancelot was defeated by Vajsh and was turned into a frog, the level of Lancelot thus decreased to 1. At event 5 Lancelot met Troll. At this point, the level of Lancelot is 1, so Lancelot will be invincible like King Arthur, so Lancelot defeated Troll, the level will be increased to 2. The output is 888+2+2+0+0 = **892**.

v) If the knight's inital *HP* is a prime number, this knight is a *Paladin*. Paladin defeated all MadBear, Bandit, LordLupine, Elf, Troll, Shaman and Vajsh regardless of the opponent's *levelO*. Paladin is unaffected by MushGhost and never picks up the Excalipoor sword

x) (*bonus*) Among the Knights of the Round Table, there were a number of special knights whose veins were flowed with the dragon blood, called the *Dragon Knights*. However, the abilities of the Dragon Knights can only be revealed if and only if the Dragon Knights get the Dragon Sword. Without a Dragon Sword, the Dragon Knight

is exactly like an ordinary Round Table knight. When the Dragon Knight gains the Dragon Sword, the Dragon Knight will defeat all opponents, including Bowser. At this time, the Dragon Knight is also not affected by MushGhost and is able to jump from the Abyss abyss at any level. Dragon Knights never picked up the Excalipoor sword whether or not they had the Dragon Sword. Once there was a Dragon Sword, the Dragon Knight never picked up another sword. A knight is a Dragon Knight if the knight's initial HP is the sum of three positive integers *x, y, z* such that $x^2 + y^2 = z^2$. Note that if the knight's initial HP is 888, this knight is not a Dragon Knight but Lancelot (see also article *u* about Lancelot).

Example 23. The knight with initial HP of 234 is a Dragon Knight because 234 = 65+72+97 and $65^2+72^2 = 97^2$.

5. Initialization

Students download the *Assignment_1.zip* file from the course's Web site. When extracting this file, you will get the following files.

input.txt	An input example
knight.cpp	Initial code
Assignment_1.pdf	Assignment description

The file *input.txt* is a sample input file as described in Section 4. File *knight.cpp* is an initialization program, in which the *readFile()* and *display()* functions have been developed already. Students are strongly encouraged to use these functions.

6. Submission

The deadline for submission is **23:55 on Tuesday, May 5th, 2020**. Students must use the account on the BKeL system to submit your work. We DO NOT receive any thing related to assignment which is sent via email or any other form. Late submissions will NOT be accepted.

In addition to the libraries already used in *knight.cpp*, students should NOT use any other library. When submitting the result (**submit on BKeL and Auto Grading System**) , students must use the account in BKeL and in AGS. Students only submit one file *knight.cpp*. The file submitted must be the original program file, BUT NOT A COMPRESS

FILE (ZIP) WHEN SUBMITTING. **Students must check their program on Cygwin before submitting.**

7. Change Log

- Change the description of 2 follow events:
  - Obtaining Mythirl armor (event code is 9)
  - Meeting Odin the God (event code is 22)

8. Plagiarism

Students must do the assignment themselves. Their works will be considered plagiarism if:

- There is large similarity between the source code of submissions. In this case, all submissions are considered plagiarism. Therefore, students must protect the source code.
- Students do not understand the source code written by themselves, except for the parts of code provided in the initialization program. Students can consult from any source, but make sure that they understand the meaning of all the code they write.

In the case of a conclusion of cheating, students will receive a zero for the entire subject (not just the assignment).

DO NOT ACCEPT ANY EXCUSE AND NO EXCEPTIONS!

After each assignment is submitted, there will be a number of students who are randomly interviewed to prove that the assignment has been submitted by themselves.