

## Notes

- You should write the appropriate static methods to show structure in your solution and to help you in writing other methods.
- Give meaningful names to methods and variables in your code.
- Include a comment at the beginning of your program with basic information and a description of the program and include a comment at the start of each method.

## Exercises

1. Write a program `Largest.java` that takes three numbers as arguments and prints the largest of the three numbers.

Example:

```
> java Largest 20.8 10.2 11.4  
The largest number is: 20.8
```

2. Write a program `Cards.java` that takes as input from the user a playing card in the shorthand notation described below, and then prints the full description of the card.

Denomination	Value
A	Ace
2, ..., 10	2, ..., 10
J	Jack
Q	Queen
K	King

Suit	Value
D	Diamonds
H	Hearts
S	Spades
C	Clubs

Examples:

```
> java Cards  
Enter the card value: AS  
You selected: Ace of Spades
```

```
> java Cards  
Enter the card value: 2H  
You selected: 2 of Hearts
```

```
> java Cards  
Enter the card value: QK  
You selected: Queen of Unknown Suit
```

```
> java Cards  
Enter the card value: VH  
You selected: Unknown Denomination of Hearts
```

3. Write a method `isPalindromePhrase` that accepts a string as argument and returns *true* or *false* indicating if the string is a palindrome or not. In this version of the method, **you are not allowed to generate a new string**. Your method must handle upper and lower case characters (the string “Madam” is a palindrome).

Use this method to write a program `Palindromes2.java` that takes an integer command line argument *N* followed by *N* strings and prints the strings that are palindromes according to the foregoing extended definition.

Example:

```
> java Palindromes2 3 "LonelyTylenol" "MadamImAdam" "Iamnotapalindrome"  
true true false
```

4. We define a *partial missed password* to be a sequence of characters with some missing characters. A question mark represents a missing character. To configure a partial missed password, the system replaces missing characters by identifiable characters. Assume that a missing character can only be replaced by the characters '#', '@', '\_', and '\*'. For example, the password "abc??bb???12z" contains five missing characters and the sequence "abc@@bb\*\*\_12z" is one possible configuration of it. Assume that a PC requires  $n$  seconds to check the validity of one configuration of a given password. A password can be *hacked* if the time to check the validity of all its configurations is less than 45 days. Write a program PasswordHacker.java that asks the user to enter (1) the number of passwords to be checked, (2) the number of second(s) to check on configuration; it then asks the user to enter the passwords, and checks if they can be hacked or not.

Example:

```
> java PasswordHacker
Number of password(s) to be checked? 3
Number of second(s) to check one configuration? 2
Enter a partial missed password: abcd
The password is complete!
Enter a partial missed password: abc???def??a
The password can be hacked in 2048 seconds
Enter a partial missed password: abc???def????ef???
The password cannot be hacked
```

5. Write a program Astrology.java that asks the user to enter his/her date of birth and prints the corresponding daily horoscope based on the following link: <http://www.cafeastrology.com/sundailyhoroscopes.html>. **Note:** You can get the zodiac sign dates from the following link: <http://www.whats-your-sign.com/zodiac-sign-dates.html>

Examples:

```
> java Astrology
Enter your date of birth: 28/01/1993
Your zodiac sign is Aquarius
Your daily horoscope is:
"You may have been dealing with more transportation and communication problems or delays in
the past few weeks, and you could also have been rethinking some of your current plans.
However, with Mercury now turning direct, you are likely to regain clarity and motivation,
particularly when it comes to schooling, career, and creative direction. Changes in
direction tend to magnify problem areas for a short time, and this can occur today. It is
probably best to wait for an easier, more flowing day to discuss important topics and to
make big decisions."
```

```
> java Astrology
Enter your date of birth: 11/13/2000
Invalid month!
```

```
> java Astrology
Enter your date of birth: 40/09/1992
Invalid day!
```

```
> java Astrology
Enter your date of birth: 40/24/2016
Invalid day!
Invalid month!
Invalid year!
```

### Submission Instructions

- Your submission must consist of a zip archive that contains five .java files only (called **Largest.java**, **Cards.java**, **Palindromes2.java**, **PasswordHacker.java** and **Astrology.java**). No additional files should exist in the .zip archive.
- The name of the zip file must adhere to the following naming convention `asst7_<netid>`, where `<netid>` stands for your AUBnet user name. These zipped files will be processed automatically so please make sure you use this naming convention. The single zipped file must be uploaded to Moodle.