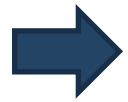
OOP Principles

Exercises for: Principles of Object-Oriented Programming with Examples in Java

Problem: Sort Cards

- Define a **class Card**, holding **face** + **suit**
  - The **face** can be one of these: **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **J**, **Q**, **K**, **A**
  - The **suit** can be one of these: **♣**, **♦**, **♥**, **♠**
- Write a program to **read a set of cards** and print them **sorted by face**, then **by suit** (use the above arrangements)

```
K♥ Q♣ 4♦ 2♦ 10♥ 4♣ 2♠
```



```
2♦ 2♠ 4♣ 4♦ 10♥ Q♣ K♥
```

```
A♦ 7♥ 7♣ 7♦ 3♦ 10♥ 3♣ 7♠
```

```
3♣ 3♦ 7♣ 7♦ 7♥ 7♠ 10♥ A♦
```

Problem: Figures

- Define the types **Movable**, **Figure**, **Circle**, **Rectangle**, and **FilledRectangle**
  - **Follow the examples** from the previous slides
  - Define **constructors**, **getters**, **setters**, **toString()** and **calcArea()** for all figures
- Write a Java program to:
  1. **Read a list of figures** (see the sample input / output)
  2. **Sort the list by area** and **print it** (see the sample input / output)

Problem: Figures – Input and Output

```
circle 5.3
rect 3.5 7.5
fillRect 2 3 red
circle 3
fillRect 2.5 3 blue
stop
```

Submit your solution to the judge:
https://judge.softuni.org/Contests/Practice/Index/3294

```
FilledRectangle(width=2.00, height=3.00, color=red, area=6.00)
FilledRectangle(width=2.50, height=3.00, color=blue, area=7.50)
Rectangle(width=3.50, height=7.50, area=26.25)
Circle(radius=3.00, area=28.27)
Circle(radius=5.30, area=88.25)
```

Problem: Compare Circles

- Implement **equals()** and **Comparable<Circle>** in the class **Circle**
- Create a program, which **reads** and **compares circles by radius**:

```
circle 12.50
circle 10
circle 7.3501
circle 10.00
compare 2 1
compare 2 3
compare 4 2
stop
```

```
Added: Circle #1 (r=12.50)
Added: Circle #2 (r=10.00)
Added: Circle #3 (r=7.35)
Added: Circle #4 (r=10.00)
Circle #2 < Circle #1
Circle #2 > Circle #3
Circle #4 == Circle #2
Goodbye
```

Next Steps

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- Join the SoftUni "Learn To Code" Community

https://softuni.org

- Access the Free Coding Lessons
- Get Help from the Mentors
- Meet the Other Learners