How to Learn a New Language

Session 25

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Enumerations

- An enum type is a particular data type that allows a variable to be one of a set of predefined constants.
- It is a class implemented in java.lang.enum.
- You can extend enum and inherit its functions.
- It can also have fields and attributes.

```
public enum weekDays {
SUNDAY,
MONDAY,
TUESDAY,
WEDNESDAY,
THURSDAY,
FRIDAY,
SATURDAY;
}
```

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enum

Some functions of the enum include:

- `values()` – returns an array of all values.
- `valueOf()` – parses a string into an `enum` constant.
- Appropriate definitions of `compareTo()`, `equals()`, `toString()`.
- Other methods:
  - `ordinal()` – returns the position of this constant in the list.
  - `name()` – returns the name of this constant.

- Use some of those functions in the previous example.

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Enumerations

- Most languages support enumerated types…

Java

```
public enum CompassDirection {
   NORTH, SOUTH, EAST, WEST
}
…
public void moveCharacter(CompassDirection d) {
…
}
```

C++

```
enum class Compass {NORTH, SOUTH, EAST, WEST};
```

Python

```
from enum import Enum
class Compass(Enum):
   NORTH = 1
   SOUTH = 2
   EAST = 3
   WEST = 4
// Or…
Compass = Enum('Compass', ['NORTH', 'SOUTH',
'EAST', 'WEST'])
```

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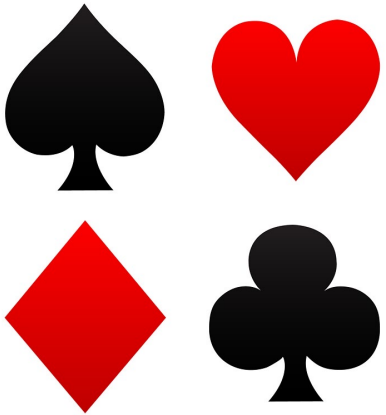
enum and card game – live coding

- Download and unzip the files in enums.zip
- Rewrite the `Card` class to represent the rank and suit of a card with `enum` types:
  - Introduce a RankPair(String, int) class - use this in the Rank enum constructor.
  - Write toString() method Should print suit, and ascii characters of the rank.

- Then rewrite the `Deck` class – create ArrayList<CardWithEnums>
- Create DisplayDeckWithWnums: Write a main() method that uses your newly-rewritten classes/enums to print out all the cards in the deck.



Diamonds (♦), Clubs (♣), Hearts (♥), Spades (♠)

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Today’s attendance password: 39ulh9

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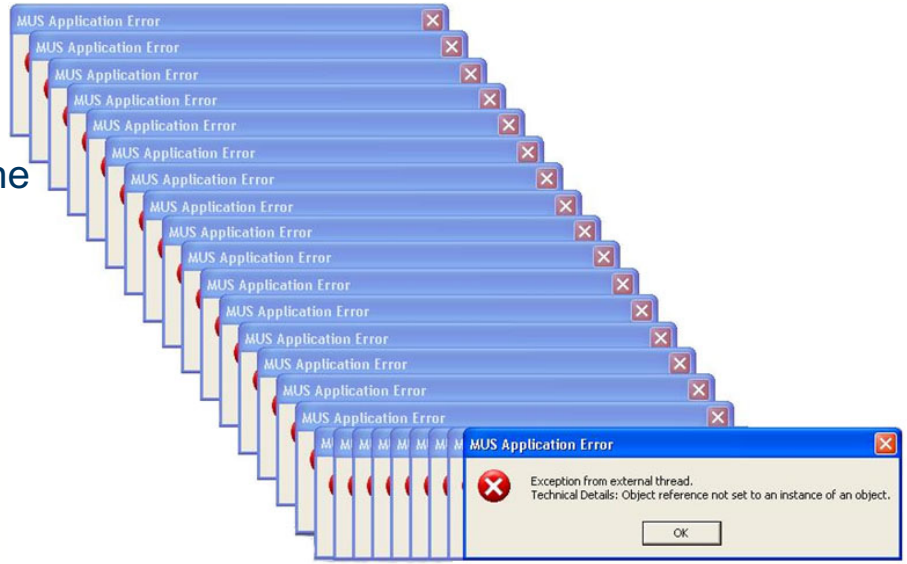
Exceptions

- When an unexpected event happens in the program an Exception is thrown.
- Exceptions are also Java objects like any other; parent class is `java.lang.Exception`.
- Unless the exception is caught, the entire program will crash.



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Exception handling

- Wrap a `try {}` block around any code that might throw an `Exception`.
- Must be followed by one (or more) `catch {}` blocks.
- First one whose parameter matches the thrown exception is executed.
- Optional `finally {}` block is executed after entire rest of the try block.
- Can also pass it on, so the calling method must deal with it instead.

```
public class AddingFloats {

    private double a;
    private double b;

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner scanner = new Scanner(System.in);
        System.out.println("Input first number: ");
        AddingFloats addFloats = new AddingFloats();

        try {
             addFloats.a = scanner.nextFloat();
        }catch(InputMismatchException ex){
            System.out.println("Please input a number!!");
        }
        System.out.println("Input second number: ");
        try {
```

Help?

Email me!

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