COLLECTION: DIGGING DEEPER WITH GENERICS

WHAT TYPE OF OBJECTS CAN A COLLECTION HOLD?

THIS IS AN IMPORTANT QUESTION

IN SOME LANGUAGES LIKE PYTHON,
A COLLECTION CAN HOLD OBJECTS OF
ANY TYPE

JAVA ENFORCES TYPE-SAFETY

IN JAVA, ALL VARIABLES HAVE DECLARED TYPES

THIS HELPS AVOID ERRORS OF THE SORT
WHERE A PROGRAMMER EXPECTS AN OBJECT
TO BE A NUMBER, BUT ITS ACTUALLY A STRING

BUT IT DOES MEAN DECLARING UPFRONT
THE TYPE OF A VARIABLE

GENERICS

CONSIDER THIS LINE OF CODE...BUNCH OF INTERESTING THING GOING ON HERE

```
private List<Pair<String,Integer> > m_mp3FileNames = new ArrayList<>();
```

PAIR IS A AN OBJECT THAT HOLDS 2 OTHER OBJECTS

WHAT 2 TYPES OF OBJECTS?
THE FIRST NEEDS TO BE A STRING, THE SECOND NEEDS TO BE AN INTEGER

THIS IS SPECIFIED BETWEEN THE INNER PAIR OF <>

NEXT WE HAVE A LIST OF SUCH PAIRS

THIS IS SPECIFIED BETWEEN THE SECOND PAIR OF <>

THE TYPES ENCLOSED INSIDE THE ANGLE BRACKETS ARE CALLED TEMPLATE PARAMETER

FINALLY, LIST IS JUST AN INTERFACE, YOU CAN'T ACTUALLY INSTANTIATE AN OBJECT OF AN INTERFACE

ARRAYLIST IS A BUILT-IN JAVA CLASS THAT INHERITS FROM LIST (AND IMPLEMENTS THE LIST INTERFACE) – SO INSTANTIATE AN OBJECT OF CLASS ARRAYLIST

REMEMBER HOW OBJECT IS A BASE-CLASS
FOR ALL JAVA CLASSES?

SO, GIVEN THIS, WE COULD HAVE SIMPLY
DECLARED OUR LIST WITH 'OBJECT' AS THE
TEMPLATE PARAMETER

HMM..THIS IS A COP-OUT, AND WOULD VIOLATE
THE SPIRIT (BUT NOT THE LETTER) OF JAVA
TYPE SAFETY

SO - DON'T DO THIS - USE REAL TEMPLATE
PARAMETERS IN YOUR CONTAINERS