## TUTORIAL 5 SOLUTIONS

1. A type is defined as an Algebraic Data Type (ADT) as follows:

*Type MyProductType = (byte, boolean, boolean)*

How many possible values can a data item of this type take?

256 \* 2 \* 2 = 1024

1. A type is defined as an ADT as follows:

*Type MySumType = boolean | short*

where *short* represents a 16-bit integer. How many possible values can a data item of this type take?

2 + 65536 = 65538

1. An ADT is defined in Scala as follows:

sealed trait Pet

case class Cat(name: String) extends Pet

case class Fish(name: String, colour: String) extends Pet

case class Squid(name: String, age: Int) extends Pet

Complete the function below that uses pattern matching to produce the results that follow

def sayHi(p: Pet): String =

p match {

<complete this>

}

sayHi(Cat("Bob"))   
res0: String = Meow Bob!

sayHi(Squid("Steve", 10))   
res1: String = Hi Steve.

sayHi(Fish("Dory", "blue"))   
res2: String = Hello Blue fishy Dory.

**def sayHi(p: Pet): String =**

**p match {**

**case Cat(n) => "Meow " + n + "!"**

**case Fish(n,c) => "Hello" + c + " fishy " + n + "."**

**case Squid(n, \_) => "Hi " + n + "."**

**}**

1. The documentation for the get method of Map provides the following information:

def get(key: A): **[Option](http://www.scala-lang.org/api/current/scala/Option.html)**[B]

Optionally returns the value associated with a key.

The following code defines a Map and uses get to try to access values by key.

val numbers = Map(1->"uno", 2->"dos", 3->"tres" , 4->"cuatro")  
val one = numbers.get(2)  
val five = numbers.get(5)

What are the values of the variables *one* and *five*?

Some(dos)

None

How can you safely access and print the values of these variables?

Use pattern matching, for example:

**five match {  
 case Some(number) =>  
 println(number)  
 case None =>  
 println("No value found")  
}**