CSPB 3155 - Reckwerdt - Principles of Programming Languages

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Started on	Tuesday, 21 May 2024, 9:22 PM
State	Finished
Completed on	Tuesday, 21 May 2024, 9:26 PM
Time taken	3 mins 52 secs
Marks	12.00/12.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 3.00 out of 3.00

Consider the class below.

```
class BarkingDog(val name: String, val breed:String, val age: Int ) {
    /* A list of shouts for the dog */
    val listOfShouts = List("Wuff Wuff", "Bow Wow Wow", "ARuff ARuff", "Rwoff", "Meow")
    /* The current shout */
    private var idx = 0
    def bark() = {
        /* Print the bark */
        println(s"${this.name}, a proud ${this.breed} says ${listOfShouts(idx)}!")
        /* Increment the index but wrap around to 0 to avoid embarassing exceptions */
        this.idx = (this.idx + 1) %(listOfShouts.length) /* This is only possible because idx is 0 */
    }
}
```

Identify each member of the class with the attributes that apply to it.

bark	Public Member Function
name	Public Immutable String
breed	Public Immutable String
idx	Private Mutable Integer

Your answer is correct.

Correct

Marks for this submission: 3.00/3.00.
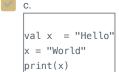
Question **2**

Correct

Mark 2.00 out of 2.00

Select all Scala programs from the list given below that will produce an error message from the Scala interpreter.

For technical reasons, you must assume that each of these programs is run inside a freshly initialized interpreter environment.

Select one or more:

☐ a.
```
val x = "Hello"
val y = 10
val z = x + y
println(z)
```

☐ b.
```
def hello(x: String): String = { "World" }
```

☑ c.   This is problematic since x is defined as a val and updated.
```
val x  = "Hello"
x = "World"
print(x)
```

☑ d.   The type of the arguments to the constructor for MyPreciousObjects should be Int, String but
                                        z is initialized with a constructor that is String, Int.
```
class MyPreciousObject  (x:
Int, y: String) {

       def returnXY() =  x
+ y

}

val z = new
MyPreciousObject("Hello", 20
)

z.returnXY()
```

☑ e.   Scala cannot define a because b is uninitialized
```
val a = b
val b = a
println( a  + b )
```

> Your answer is correct.
>
> (Correct)
> Marks for this submission: 2.00/2.00.

Question **3**

Correct

Mark 3.00 out of 3.00

```
def foo(x: Int): Int = x + 2

def bar(y: String): String = "Hello" + y

def baz(z: String): Int = {

      val str1 = bar(z)

      val siz1 = str1.size

      foo(siz1)

}
```

Which of the following statements about these functions are true?

Select one or more:

☐ a. The value siz1 in baz will have the type String

☐ b. Although foo's argument x is typed to be an Int, scala will correctly execute a call such as foo("World")

☑ c. baz takes in an input string and returns the number equaling the size of input string plus 7.

☑ d. Changing the last statement of baz from

```
foo(siz1)
```

to

```
return foo(siz1)
```

does not change its meaning.

☑ e. Calling foo(bar(z)) will result in a type mismatch error because the output type of bar (String)
    is not the same as the input type of foo (Int).

Your answer is correct.

(Correct)

Marks for this submission: 3.00/3.00.

Question **4**

Correct

Mark 2.00 out of 2.00

Consider the scala loop below:

```
for (i <- 0 to 10) {
    println(i)
}
```

How many times will it run?

Answer: 11

Correct
Marks for this submission: 2.00/2.00.

Question **5**

Correct

Mark 2.00 out of 2.00

Consider the scala loop below:

```
for (i <- 0 until 10) {
    println(i)
}
```

How many times will the loop run?

Answer: 10

a until b in Scala creates the sequence from a, to but not including b.

Correct
Marks for this submission: 2.00/2.00.