

COMP1120 Quiz Lab 3 (Answers)

1. Given the declaration below, write an Eiffel expression to determine the length of the array.

```
my_array: ARRAY[INTEGER]
```

A. `length := myarray.count`

or

A. `length := myarray.upper - myarray.lower + 1`

2. Given the two arrays declared below write the Eiffel code to take the i^{th} element of the source array and put it in the destination array in the j^{th} position.

```
source_array: ARRAY[INTEGER]
destination_array: ARRAY[INTEGER]
```

A. Single line solution:

```
destination_array.put (source_array.item (i), j)
```

A. Multiline solution:

```
new_val := source_array.item (i)
destination_array.put (new_val, j)
```

3. You have to write a program to take care of all IT students' grades for COMP1120. Each student has a surname, initial of their first name and UniID. Provide attribute names and their data types that could be used to represent this information in Eiffel.

A. `surname: STRING`
`initial: CHARACTER`
`uni_id: INTEGER`

4. Determine the value of sum after the completion of the loop.

```
sum: INTEGER
i: INTEGER

from
  i := 1
  sum := 0
until
  i > 5
loop
  if ((i \ 2) = 0) then
    sum := sum + i
  else
    sum := sum - 1
  end
  i := i + 1
end
```

Note: the ' \backslash ' operator in Eiffel gives the remainder of the division. e.g. $7 \backslash 3 = 1$ and $9 \backslash 3 = 0$

A. sum = 3 (the loop adds even numbers and subtracts one for each odd iteration)

5. Given the 'short' form of the CAR class below,

```
class interface CAR
-- Class to record information about cars sold at a car yard.

creation
  make (pr: REAL; tp: STRING; clr: STRING)

feature(s) from CAR

  type: STRING
  colour: STRING
  price: REAL

  make (pr: REAL; tp: STRING; clr: STRING)

end of CAR
```

(a) draw an object diagram of this class after the following declaration:

```
my_car: CAR
```

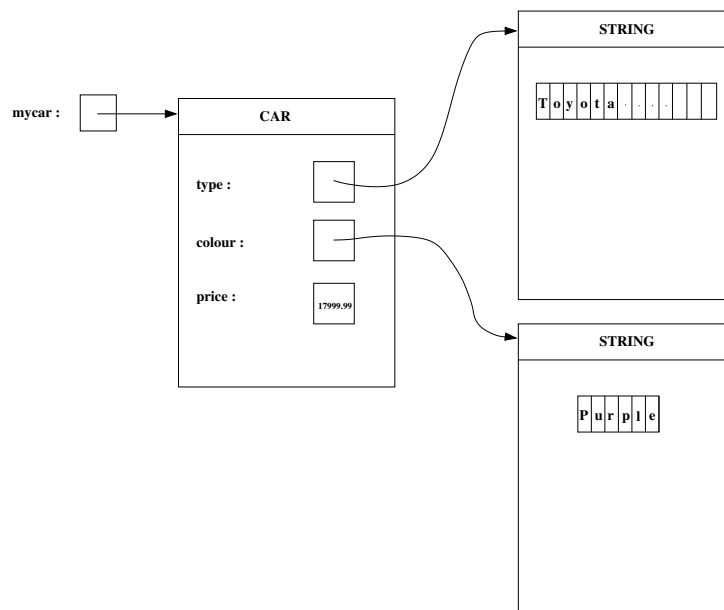
A.



(b) Draw an updated object diagram of this class after the statement:

```
!!my_car.make (17999.99, "Toyota Corolla", "Purple")
```

A.



6. Rewrite the following code with correct formatting.

```
if
    some_int > 29
    then
io.put_string("29 right on time.")
io.put_new_line
    else
        io.put_string("You're late.")
    io.put_new_line
end
```

A.

```
if some_int > 29 then
    io.put_string("29 right on time.")
    io.put_new_line
else
    io.put_string("You're late.")
    io.put_new_line
end
```

7. Cross out those lines below which could NOT be correct fragments of an Eiffel program.

- (a) print my_name to screen
- (b) if equal(object1,object2) then
- (c) myarray.item(i).put(15)
- (d) myalphabet_array.item(i).to_upper.code

A.

- (a) print my_name to screen
- (b) if equal(object1,object2) then
- (c) myarray.item(i).put(15)
- (d) myalphabet_array.item(i).to_upper.code

8. Given the short interface below, provide a list of attributes and a list of routines.

```
class interface PERSON
-- Class to record information about people

creation
  make (n: STRING; telno: INTEGER; sex: CHARACTER)

feature(s) from PERSON

  name: STRING
  gender: CHARACTER
  telephone_number: INTEGER

  make (n: STRING; telno: INTEGER; sex: CHARACTER)

  change_phone_number (new_phone: INTEGER)

end of PERSON
```

Attributes

- name
- gender
- telephone_number

Routines

- make
- change_phone_number

9. Write the implementation of the `change_phone_number` routine mentioned above.

A.

```
change_phone_number (new_phone: INTEGER) is
do
  telephone_number := new_phone
end
```