PMA Exam June 2022 Answers

a) False
b) True
c) False
d) True
e) True
f) False
g) False
h) True
i) True
j) True

[1 mark for each part]

Question 2
a) i) getTime [1 mark]
   ii) Time [1 mark]
   iii) Time [1 mark]
   iv) getTime() [1 mark]
b) i) time [1 mark]
   ii) none [1 mark]
   iii) none [1 mark]
c) i) Shape [1 mark]
   ii) No [1 mark]
   iii) Yes [1 mark]

Question 3
a)
```
22:50:39:~/Daves Docs/Work/Teaching/Med2/2022/Exam/eclipse-workspacd/PMAExam2022  % java -jar q3.jar dave
dv
DONE
```
[4 marks]
b)
```
22:52:40:~/Daves Docs/Work/Teaching/Med2/2022/Exam/eclipse-workspacd/PMAExam2022  % java -jar q3.jar
Usage: java -jar q3.jar <name>
```
[2 marks]
c) Yes, because the body of the for loop is a single statement. [2 marks]
d) No. The main method must be static because it needs to be run before any instances of any classes have been constructed. [2 marks]

Question 4
a) Class diagram
b) Any number
c) 1 or more
d) Overload
e) Override
f) No. Because the black triangular arrowhead tells us the directionality of the label of the association labelled "reserves".
g) At least "name", possibly other ones too that are not shown in the diagram.

h) Yes.
i) Not specified, so default - public
j) No.

[1 mark for each correct answer]

Question 5
a) (1,2)
(3,4,5) [5 marks]
b) Super keyword calls the superclass's constructor, in this case, the constructor of the A class, defined in lines 14-17. [2 marks]
c) No. If lines 31 and 32 were swapped, the program would not run because the call to the superclass's constructor must be the first line in the subclass's constructor. [2 marks]
d) No. [1 mark]

Question 6
a)
```
C1
C2
C3
C4
```
[4 marks]
b)
```
C1
C1
C1
C1
```
[2 marks]
c)
```
C0
C1
C2
C3
```
[2 marks]
d) There would be an error in line 10 because it is trying to modify the value of an initialized final variable. [2 marks]

Question 7
a) Many possible answers, for example:
```
<terminated> Q7 [Java Application] /Applications/Eclipse.app/Contents/Eclipse/plu
I LOVE JAVA I JAVA LOVE I LOVE JAVA I LOVE JAVA I LOVE JAVA
Thread I stopped.
LOVE JAVA
Thread LOVE stopped.
JAVA
Thread JAVA stopped.
```

```
I LOVE JAVA I LOVE JAVA JAVA I LOVE JAVA LOVE I JAVA I LOVE
Thread I stopped.
JAVA LOVE
Thread LOVE stopped.
JAVA
Thread JAVA stopped.
```
   [4 marks]
   b) 11, 33, 35, 37 [4 marks]
   c) If the main thread were interrupted, e.g., by the operating system. [2 marks]

Question 8
   a) GroupLayout
   b) Allows the program to be terminated by closing the main window.
   c) Allows the layout manager to decide on the gaps between GUI components and the GUI borders.
   d) ActionEvent
   e) Defines the vertical dimension of the layout.
   f) The event dispatch thread.
   g) Because Swing methods are not thread safe. All event handling from a GUI in Swing has to occur on the event dispatch thread. This is why we have to create the GUI object and then run its run method on the EDT.
   h) The Convert object constructed in line 72.
   i) Registers the Button object with the Convert object which serves as an ActionListener that responds to events emitted by the button.
   j) The parseDouble method in line 61.

[1 mark for each correct part]

Question 9
   a) onPause
   b) Should always call the superclass's corresponding lifecycle callback as the first line of the overriding callback function.
   c) Implicit
   d) onPause
   e) onRestart

[2 marks for each correct part]

Question 10
   a) Motion: accelerometer, gravity sensor, gyroscope, rotational vector sensor
      Environmental: Thermometer, barometer, photometer, hygrometer
      Position: Orientation, magnetometer
      [3 marks]
   b) Returns a List of all the sensors available on the system. [3 marks]
   c) A non-streaming sensor only reports a reading when there is a change in the sensor; a streaming sensor emits readings repeatedly with an approximately equal period in between. [2 marks]
   d) onAccuracyChanged and onSensorChanged. [2 marks]