

Example Answer for Unit 1 Exam Style Question 1

Question 1 [25 marks]

a. [9 marks]

Explain what the following program fragment does, both line by line and overall.

```
String name;  
Scanner scanner = new Scanner(System.in);  
  
System.out.println("What is your name?");  
name = scanner.nextLine();  
String response = "Hello " + name;  
System.out.println(response);
```

Commentary on the kind of answer expected

This question asks for an explanation. Therefore it needs more than a bullet point answer. There are many ways it could be answered. You could use diagrams to aid the explanation, for example. What is important for the marks is that a good explanation is given that a novice would understand. For full marks both the individual lines and the overall action must be clearly explained. Below is an example answer. Yours will have been different. Your aim is to have written something that someone else would understand. Write with yourself before you started the module in mind. What explanation would have helped you understand?

Example answer

Overall the fragment of code writes the message "What is your name" to the terminal window, waits for your response then prints Hello followed by the text that was typed in the terminal window.

Line by line, the way this is done is to first declare a variable of type String called name. Next a new scanner variable is created it holds a new link from the keyboard to the scanner software in the program so that things typed can be accessed by the program.

Next the method System.out.println is called to print a message to the screen. It is given an argument, the string value "What is your name?". This string is printed by the method in to the next line of the terminal window, moving to a new line.

The actual input request is created by a call to the method, scanner.nextLine(). It waits until text has been typed at the keyboard and enter pressed. Whatever was typed (the series of key presses) is then passed as a string (sequence) of characters back into the program. The program takes that string and stores it in a newly created String variable called name. It acts as a storage box to hold the information in until it is needed by later lines of the program. So if I typed Paul then hit the ENTER key then the string "Paul" would be stored in variable name when this instruction finished.

The next line gets a copy of whatever string was stored in name and concatenates the text "Hello " onto the front. So if I had typed Paul when asked, a new long string "Hello Paul" is created (gluing the string literal to the contents of the variable). This new string is placed in a newly created variable called response.

Finally, a copy of the contents of this new variable response is passed to the method System.out.println which prints the message to the screen in the terminal window.

b. [6 marks]

*The following program fragments contain bugs. **Identify and correct the bugs justifying your corrections.***

i)

```
String hello1 = "Hello " + "There;
```

ii)

```
String hello2 = "Hello" + "There";
```

iii)

```
strng hello3 = "Hello There";
```

Commentary on the kind of answer expected

For full marks a justification must be given in each case. As there are 2 marks allocated per part you might expect 1 mark for making the correction and a further 1 for a good justification.

i)

A closing quote is missing off the string "There". This is a compile time error - the compiler will catch it as it is a punctuation mistake that means the piece of code is not valid Java.

```
String hello1 = "Hello " + "There";
```

ii)

This is not a compile time error (the compiler can't tell that anything is wrong) but it will cause a run time error. It is perfectly good Java but just does not do what the programmer intended (presumably) as it prints out the message "HelloThere" with no space between the words printed. It will only be spotted (if at all) when the program is run, not by the compiler.

```
String hello2 = "Hello" + " There";
```

iii)

This contains a compile time error. The keyword "String" has been misspelled in two different ways. First it must start with a capital letter. Secondly an i has been missed.

```
String hello3 = "Hello There";
```

c. [10 marks]

Write a Java program using that asks the user what colour eyes they have, then prints out a message confirming it:

*What colour are your eyes? blue
So your eyes are blue are they. I like blue.*

A second run might go (where the user types brown rather than blue):

*What colour are your eyes? brown
So your eyes are brown are they. I like brown.*

Commentary on the kind of answer expected

*The following table gives an indicative idea of what marks an answer deserves]
7-10 marks:*

*Logically correct program. It does the right thing.
Greater marks for doing it elegantly...comments,
efficient algorithm, methods etc.*

*5-6: Does something, but not quite the right thing.
Contains one or more logical errors, but basically shown can solve problem.*

*4 : More major errors but evidence that can write a program using appropriate
constructs if put in front of a compiler - though it may take time.*

*0-3: Fragmentary code answer - eg rote=learnt bits of code.
No clear evidence can write a program to solve a problem.*

One example answer:

```
/* *****
AUTHOR Paul Curzon
A program that politely enquires of people's eye colour
***** */

import java.util.Scanner; // Needed to make Scanner available

class eyes
{
    public static void main (String[] param)
    {
        // We want to print out the message defined
        // in method helloMessage

        askForEyeColour();
        System.exit(0);

    } // END main

    /* *****
       Method askForEyeColour asks the user for their eye colour,
       then stores it in the variable called eyeColour
       it is then printed back as part of a message.
    */

    public static void askForEyeColour()
    {
        String eyeColour = inputColour();

        System.out.println(
            "So your eyes are " + eyeColour +
            " are they. I like " + eyeColour+ "." );
        return;
    } // END askForEyeColour

    /* *****
       This method gets a single string - an eye colour. from the user
       and returns it
    */
    public static String inputColour()
    {
        Scanner scanner = new Scanner(System.in);
        String colour;

        System.out.println("What colour are your eyes?");
        colour = scanner.nextLine();

        return colour;
    } // END inputColour

} // END class eyes
```