Unit 2 – ICS3U0 – Java Loops and Methods

Sample Test – October 17, 2022

Name: Solution

Total	%	Knowledge	Communication	Thinking	Application
(100)	%	(22)	(26)	(25)	(27)

Knowledge

1. (a) What are the parts of a loop? /12

1	Initialize loop stopping variable
2	Test loop stopping condition
3	Steps to Repeat
4	Progress toward the loop stopping condition

(b) On **both** of the following loops, circle each part of the loop. Use the numbers from (a) to label each part.

```
for(int i=0; i<100; i++)
        System.out.print("The leaves are falling.");
System.out.println();
```

```
char stop = 'n';
while(stop=='n'){
        System.out.println("Today is a sample test.");
        System.out.println("How exciting. How wonderful.");
        System.out.println("Who doesn't love a SAMPLE TEST? Hooray!");
        stop = IO.inputChar("Again? (y/n) ");
}
```

2. Circle true or false based on the adjacent code. /10

```
for(int i=5; i<55; i+=10)
        System.out.print(i+" ");
System.out.println();


int k = 2;
while (k<6){
        System.out.print(k+" ");
        k++;
}
System.out.println();
```

T (F) a. The loop stopping condition in the first loop is (int i = 5).

T (F) b. The Boolean expression in the second loop is (k++).

(T) F c. There are 2 loops.

T (F) d. If the stopping condition in the second loop were changed to k>5, the second loop would not stop. doesn't even run

(T) F e. Without the code i+=10, the first loop would not stop.

T (F) f. This program contains repetition and decision control structures. loop 4. (no if)

T (F) g. Loop stopping variables are always int types. sandwich loop.

(T) F h. i+=10 adds 10 to the variable i and saves the result in i.

T (F) i. The second loop prints: 2 3 4 5 6 2 3 4 5

T (F) j. The first loop prints: 5 15 25 35 45 55 5 15 25 35 45

Communication

3. What title comments should appear at the top of your Scavenger Hunt program? /1

```
//Name:  Nancy Gorski
//Date:  Oct 17, 2022
//Title: Scavenger Hunt
```

4. Name four of Steven Johnson's factors that lead to creativity. /2

Adjacent Possible, Serendipity, Exaptation

Slow Hunt	Error	Platforms	Liquid Networks

5. What does PDLC stand for? /1

Product	Development	Life	Cycle

6. Answer these questions about the PDLC. /8

(a) What are the phases of the PDLC (in order)?

A	Analysis
B	Design
C	Code
D	Reflection

(b) Name of the phase of the PDLC with the following steps.

1	Make flowcharts.	Design
2	Evaluate the successes and failures of game.	Reflection
3	Create detailed artwork.	Design
4	Write background music.	Design
5	Alpha testing.	Code
6	Brainstorm ideas.	Analysis
7	Write the loops and ifs.	Code

7. Fill in the terms described. /10

GTA5		a) Innovative sales and marketing led to record breaking sales for this program.
signature		b) The name of the first line of a method.
parameter		c) Values that are passed into a method.
Gold master		d) The final product of the coding phase of the PDLC.
Analyst		e) A job in the first phase of the PDLC.
Candy Crush		f) Creative design phase allowed this game to reach untapped markets and earn $1M per day in 2013.
Structure Chart		g) Charts drawn to design methods, return types and parameters.
for (or while)		h) Java keyword for a structure used to repeat code.
method		i) A subprogram.
writer		j) Job that would create a storyline in the PDLC.

8. Explain why Dumb Ways to Die is significant in the history of games. (1 reason, explain) /2

During the analysis phase, the creators of Dumb Ways to Die faced a challenging problem: how to get teenagers to avoid near miss train accidents. It is their creative + clever solution to this problem that makes them significant — they choose a simple fun app to teach train safety, reducing accidents by 30%.

9. How does the PDLC allow large groups of programmers to work together? (1 reason, explain) /2

The PDLC involves extensive planning and the detailed layout of the entire program (including storylines, code structure and method signatures). This planning allows the coding work to be easily subdivided, then seperately completed and smoothly put together in a final product.

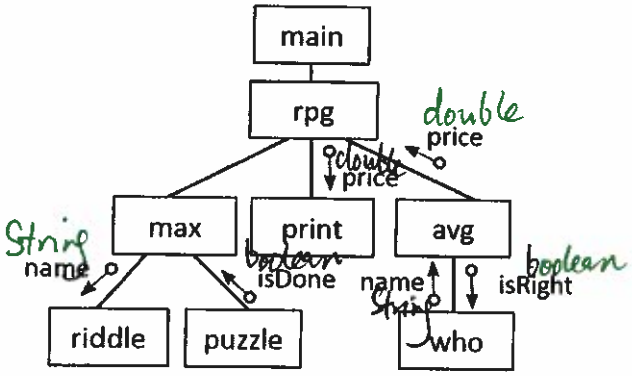
Thinking

10. Circle the most correct answer concerning the method shown (true or false) /5

```
public String fizzBuzz (int n){
        if(n%15==0)
                return "FizzBuzz";
        else if (n%3==0)
                return "Fizz";
        else if (n%5==0)
                return "Buzz";
        else
                return n+"";
}
```

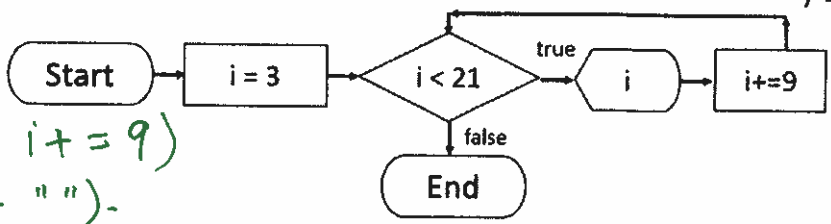
(T)	F	a)	The method name is fizzBuzz.
T	(F)	b)	The method return type is int. it is String
T	(F)	c)	The parameter type is n. parameter name is n
T	(F)	d)	The parameter name is fizzBuzz.
(T)	F	e)	This method would send out a String.

11. Answer the following short answer questions about this structure chart. /5



(a)	How many methods?	6 (or 8)
(b)	Which method has a String parameter?	riddle
(c)	Which method has a double parameter?	print
(d)	Which method has an boolean return type?	puzzle
(e)	What is the name of the constructor?	rpg

12. Write for loop code that would result from this flow chart. /4

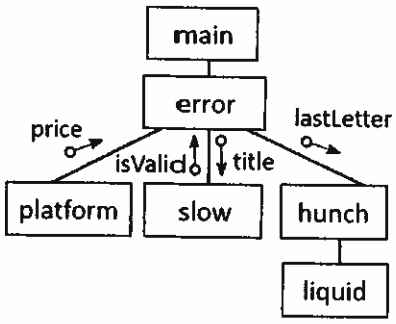



```
for (int i=3; i<21; i+=9)
    System.out.print(i + " ");
```

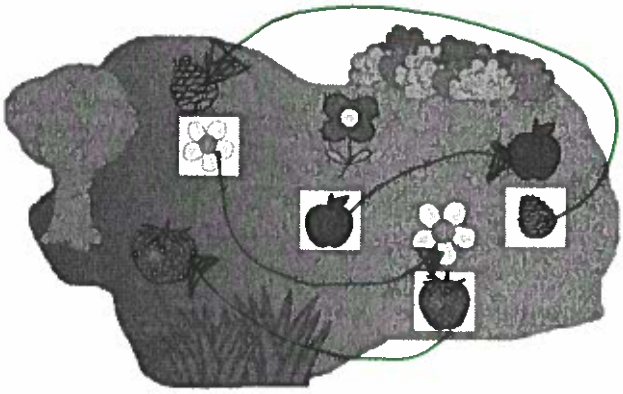
on page 1

13. Write the **4** method **signatures** that would result from this structure chart. /8

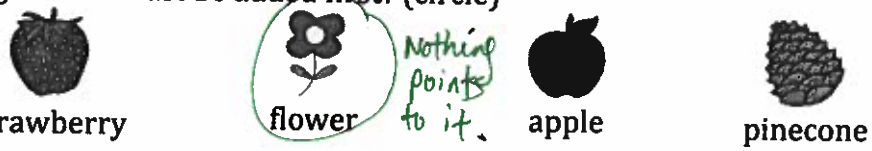
Method start word	return type (output)	method name	(parameter type	parameter name (input))
public	double	platform	(/	/)
public	boolean	slow	(String	title)
public	void	hunch	(char	lastLetter)
public	void	liquid	(,	/)



14. Beavers are preparing for a Woodland Food Festival. They would like to bake a cake but their baker is on vacation. Bobby Beaver decides to try to bake the cake. He remembers that it is important to add five essential ingredients in the correct order. When he gets to the garden shown below, he finds a piece of paper beside all but one ingredient. The paper shows which ingredient must be added next.



(a) Which ingredient must be added ~~first~~? (circle) /3



(b) Write the method calls required to make the recipe inside the constructor.

```
public class recipe {
  public static void main(String args[]){
      new recipe();
}
  public recipe(){
    fourpetalflower();
    apple();
    pinecone();
    fivepetalflower();
    strawberry();
}
```

```
public void apple(){
     System.out.println("apple added.");
}
public void fourpetalflower(){
     System.out.println("4 petal flower added.");
}
public void fivepetalflower(){
     System.out.println("5 petal flower added.");
}
public void pinecone(){
     System.out.println("pinecone added.");
}
public void strawberry(){
     System.out.println("strawberry added.");
}
}
```

Application

15. Add a sandwich loop in this code to make the program run until the user wishes to quit. /5

on page 1.

don't forget { }
↳ they are worth 2 marks out of 5

```
char stop = 'n';
while (stop == 'n') {

int n = (int) (Math.random () * 8) + 1;
int sq = IO.inputInt ("Evaluate: " + n + "^2 : ");
if (sq == n*n)
    System.out.println ("You got it!");
else
    System.out.println ("The square of " + n + " is " + (n*n));
stop = IO.inputChar("Again? (y/n)");
}
```

16. Write for loops that print out each of the following sequences. /6

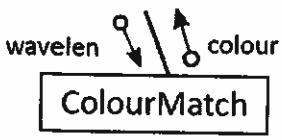
(a) 5 6 7 8 9 10 11 12 13 14

```
for(int i=5; i<=14; i++)
  System.out.print(i + " ");
```

(b) 18 16 14 12 10 8 6 4

```
for(int i=18; i>3; i-=2)
  System.out.print(i + " ");
```

17. Write a method that takes an integer and returns a String. /8
The String should be the colour that corresponds with the wavelength.
Nothing should be printed out in the method and it should be efficient.
If the number is greater than 740 or less than 380, return "Not visible".



Wavelen	740-626	625-591	590-566	565-501	500-436	435-380
Colour	Red	Orange	Yellow	Green	Blue	Violet

```
public String ColourMatch (int wavelen)
{
  if (wavelen > 740)
    return "Not visible";
  else if (wavelen > 626)
    return "Red";
  else if (wavelen > 591)
    return "Orange";
  else if (wavelen > 566)
    return "Yellow";
  else if (wavelen > 501)
    return "Green";
  else if (wavelen > 436)
    return "Blue";
  else if (wavelen > 380)
    return "Violet";
  else
    return "Not visible";
}
```

method start word | return type (output) | method name (see structure chart) | parameter type | parameter name (input, on chart)

18. Create a parallelogram on the screen using loops. Ask the user for the size.
Three different runs of the program are shown.

How big? **-1** Can't be drawn.	How big? **4** **** **** **** ****	How big? **7** ******* ******* ******* ******* ******* ******* *******

(a) Fill in the following. (The user choose 6 for "How big?". Spaces are indicated with an 's'.) /2

Line	*# Leading Spaces on line (s)*	*# Stars on line (*)*
******	0	6
s******	1	6
ss******	2	6
sss******	3	6
ssss******	4	6
sssss******	5	6

(b) Fill in the code needed to create the shape: /6

```
//Ask the question, get input
  int n = IO.inputInt("How big? ");

//If it can't be drawn say so
  if (n <= 0)
     System.out.println("Can't be drawn.");
//Otherwise, draw it.
  else {
       for (int i=0; i<n; i++) {

            //spaces
            for (int j=0; j<i; j++) {
                System.out.print(" ");
            }

            //stars
            for (int j=0; j<n; j++) {
                System.out.print("* ");
            }

            System.out.println();
  }
```