Unit 2 – ICS3U0 – Java Loops and Methods

Sample Test – Thursday October 17, 2024

Name: Gorski

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 To 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();
```

*Notice there are 2 loops. Label both.

```
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 if no if
T (F) g. Loop stopping variables are always int types. – see 2nd loop in #1
(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 Tic-Tac-Toe program? /1

```
//Name:  Amanda Gorski
//Date:  Oct 17, 2024
//Title: Tic-Tac-Toe Game
```

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

Adjacent Possible, serendipity, Exaptation

Slow Hunch	Error	Platforms	Liquid Networks

5. These questions relate to the PDLC. /9

(a) What does PDLC stand for?

Product
Development
Life
Cycle

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

1	Analysis
2	Design
3	Coding
4	Reflection

(c) **Name** the associated phase of the PDLC.

1	Create advertisements.	Reflection
2	Brainstorm a new game idea.	Analysis
3	Beta Testing.	Code
4	Write if statements.	Code
5	Write comments.	Code
6	Draw a structure chart.	Design

6. Fill in the terms described. /10

GTA 5		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.
Testing		d) ¾ of the code phase is devoted to this.
Candy Crush		e) Creative design phase allowed this game to reach untapped markets and earn $1M per day in 2013.
Structure Chart		f) Charts drawn to design methods, return types and parameters.
Method		g) A subprogram.
For (or) While		h) Java keyword for a structure used to repeat code.
Analysis		i) A job in the first phase of the PDLC.
Writer		j) Job that would create a storyline in the PDLC.

7. 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 accidents. It is their creative solution to this problem that makes them significant - they picked a simple, fun app to teach train safety; reducing accidents by 30%

8. Why are methods useful? (2 points, one sentence each) /2

① methods allow programmers to repeat a block of code by calling it; as we did in the drawing methods programs.
② Methods can create "rooms" in the code to allow navigation between them; as we did in the scavenger hunt.
③ methods can organize code into functions/sections as we did in our RPG tasks in our games

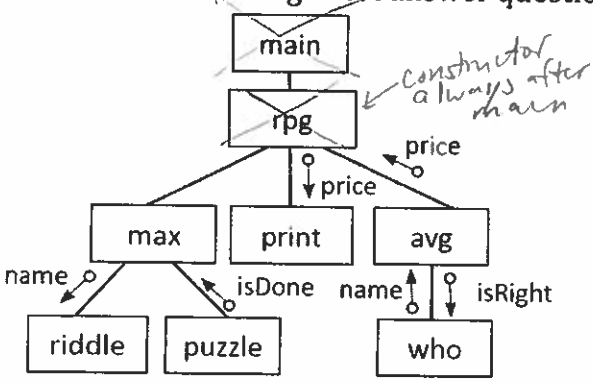
Thinking

9. 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.
T	(F)	c)	The parameter type is n.
T	(F)	d)	The parameter name is fizzBuzz.
(T)	F	e)	This method would send out a String.

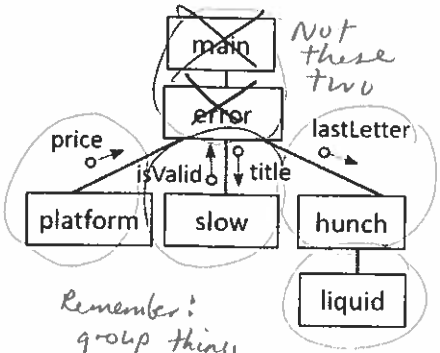
10. Answer the following short answer questions about this structure chart. /5



(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

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

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

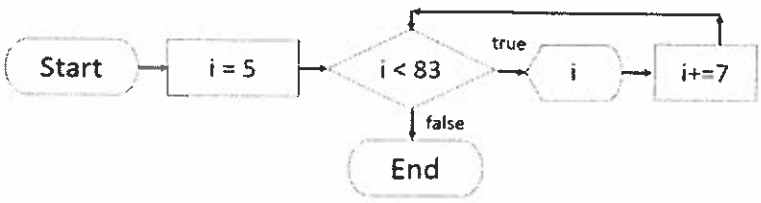


12. Write **for** loop code that would result from this flow chart. /3

Don't forget int.

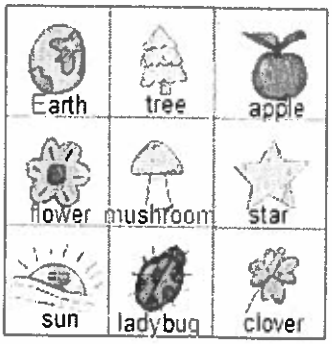
```
for (int i=0; i<83; i+=7)
    System.out.println(i + " ");
```

Don't forget



13. A board is divided into squares and a different object is placed in each square as shown. The swap method exchanges the locations of two objects. The swap method is called 3 times in this order:

```
swap (flower, tree);
swap (tree, ladybug);
swap (ladybug, star);
```

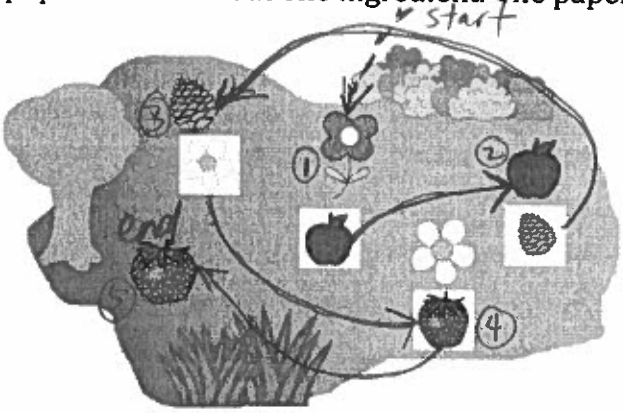


/1

What is the location of the star after the last swap? (circle)

(i) (ii) (iii) (iv)

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


strawberry


flower


apple


pinecone

nothing comes in.

(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(){
① fourpetalflower();
② apple();
③ pinecone();
④ fivepetalflower();
⑤ 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 code to make the program run until the user wishes to quit. /5

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

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("Stop? (y/n)");
}
```

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

don't forget

(a) * * * * * * * * * *

```
for(int i=0; i<10; i++)
  System.out.print("* ");
```

print space

don't forget

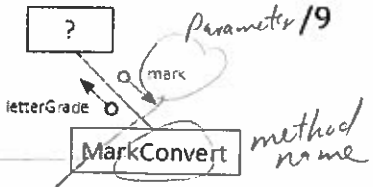
(b) 18 16 14 12 10 8 6 4

```
for(int i=18; i>=4; i-=2)
  System.out.print(i + " ");
```

space

17. Write a method that takes an integer and returns a char. /9
The char should be the A, B, C, D or F that corresponds with the mark.
Nothing should be printed out in the method, return the char instead.

Letter	A	B	C	D	F
Mark	80+	70-79	60-69	50-59	49-0




```
public char MarkConvert (int mark) {
    if (mark >= 80)
        return 'A';
    else if (mark >= 70)
        return 'B';
    else if (mark >= 60)
        return 'C';
    else if (mark >= 50)
        return 'D';
    else
        return 'F';
}
```

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

18. Create a right-angled triangle on the screen using loops based on the size entered.

Three different runs of the program are shown. The user could enter any size.

How big? -1 Can't be drawn.	How big? 4 4444 333 22 1	How big? 7 7777777 666666 55555 4444 333 22 1

/7

```
//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=n; i>0; i--)
   {
      for(int j=0; j<i; j++)
      {
         System.out.print(i);
      }
      System.out.println();
   }
```