Unit 1 – ICS3U0 – Introduction to Java

Sample Test, Wednesday February 18, 2026

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Total	Knowledge	Communication	Thinking	Application
(100)	(30)	(22)	(25)	(23)

Knowledge

1. Answer the following questions: /6

	Instruction	Data	Answer
(a)	Translate from our number system to binary.	18	16 8 4 2 1 1 0 0 1 0
(b)	Translate to binary.	B (which is 66)	64 32 16 8 4 2 1 1 0 0 0 0 1 0
(c)	Translate from Unicode to binary. Hex A 10 B 11 C 12 D 13 E 14 F 15	1439 <	8 4 2 1 1: 0 0 0 1 4: 0 1 0 0 3: 0 0 1 1 9: 1 0 0 1
(d)	Translate from binary to hexadecimal.	A E 10 14 8421 8421 1010 1110	AE
(e)	Translate from hexadecimal to binary.	B5 11	8 4 2 1 B: 1 0 1 1 5: 0 1 0 1
(f)	What letter is this ASCII?	64 32 16 8 4 2 1 1000111 Capital 7th letter	G

2. If x is 8 and y is 2, evaluate the following. (circle the correct answer) /8

True	False	Error	a)	1<x<5	1<x && x<5	True	False	Error	e)	x=y	x==y
True	False	Error	b)	!(x=y)	==	True	False	Error	f)	y<=x	2 <= 8
True	False	Error	c)	x!=3 || x==2		True	False	Error	g)	x==x	
True	False	Error	d)	y=>4	>=	True	False	Error	h)	(x!=0) || (x==0)	

3. If x is 8 and y is 2, then what are the values of the following? Show all of the steps. /4

a) `x > 3 || y != 9` sub in first

= 8 > 3 || 2 != 9

= T || T

= T

b) `x < y && !(x == 1)`

= 8 < 2 && !(8==1)

= F && !F

= F && T

= F

4. Write a Boolean expression to represent each of the following: /3

a) x does not equal 50 — `x != 50` (or `!(x==50)`)

b) x is between 40 and 50 — `x>40 && x<50`

c) x is less than 40 or greater than 50 — `x < 40 || x > 50`

5. The following questions are based on this class. /9

```
public class ifs
{
  public static void main (String args[])
  {
     new ifs ();
  }

 public ifs ()
 {
   int num = IO.inputInt ("Number? ");
   if (num == 1)
     System.out.print ("Boone-Iron");
   else if (num > 30)
     System.out.print ("Carver-Crops");
   else if (num == 14)
     System.out.print ("Dean-IBM Chip");
   if (num < 3)
     System.out.print ("Morgan-Safety");
   else
     System.out.print ("Walker-Hair");
  }
}
```

save as ifs.java

Class Name / constructor name

Boolean exp

Boolean Exp

Boolean Exp

Boolean Exp

2 outputs possible

Identify the following in the code:

(a)	What is the class name?	ifs
(b)	Identify a Boolean expression.	num == 1 (others possible)
(c)	What type of variable is declared?	int
(d)	What should the file be saved as?	ifs.java

What is printed for each of the following inputs?

num is 1	Boone-Iron	Morgan-Safety
num is 30	Walker-Hair	
num is 31	Carver-Crops	Walker-Hair
num is 14	Dean-IBMChip	Walker-Hair
num is -2	Morgan-Safety	

Communication

6. Fill in the blanks in the Madlibs story's constructor after looking at the output below. /6

Input/Output

questions

```
Enter a number: 99
Enter another number: 1
Enter yet another number: 12
Enter an adjective: smelly
Enter a place: fire department
```

```
House for Sale! Very smelly!!!

This smelly house has 99 bedroom(s) and
1 bathroom(s). It is conveniently located
near the local fire department which buyers
will find very smelly. Cost = $12
```

questions

```
  public House ()
  {
    int num1 = IO.input_Int_ ("Enter a number: ");
    int num2 = IO.inputInt ("Enter another number: ");
    int num3 = IO.inputInt ("Enter yet another number: ");
    String adj = IO.inputString ("Enter an adjective: ");
    String place = IO.inputString ("Enter a place: ");
    System.out.println ("\nHouse for Sale! Very "+adj+"!!!\n");
    System.out.println ("This " + adj + " house has " + num1 + " bedroom(s) and ");
    System.out.println (num2+ " bathroom(s). It is conveniently located ");
    System.out.println ("near the local " + place + " which buyers ");
    System.out.println ("will find very " + adj + ". Cost = $" + num3 );
    }
}
```

use variables

7. Provide the term for each definition. /8

Declare		The creation of a new variable. Eg. int x = 0;
Main		The name of the method that starts the program.
Constructor		The name of the method where you place your code.
Math.PI		The way to write π in java.
Math.pow(x,2)		The way to write x^2 in java.
public		The first keyword that appears in a java program.
if		A control structure that is a decision statement in java.
Boolean		The name of an expression that evaluates to true or false.

8. Why are each of the following variable names inappropriate? /4

`GarretMorgan!` ..... special character (!)

`int` ..... keyword

`traffic light` ..... space

`4safety` ..... starts with a number

9. What is similar between Unicode and ASCII? What is different?
(two questions, one sentence for each) /2

Both Unicode and ASCII are used to encode letters into binary. Eg in ASCII A is 1000001 ASCII is only 7 bits so it can only encode English letters, while Unicode varies in length, so it can code all of the world's languages.

10. Why aren't all variables stored as Strings? (2 points, one sentence for each) /2

Strings use the most memory to store them.

Strings cannot do math; only doubles & ints can.

Thinking

11. Assume all numbers are integers. What are the answers to the following questions? /4

`10/5`	2	`7/0`	error	`10/24`	0	`203/1`	203
`10%5`	0	`7%0`	error	`10%24`	10	`203%1`	0

12. Classify each piece of input with the most appropriate type. /4

(a)	Johnson	String	(c)	45.3	double	(e)	(905) 453-9220	String
(b)	-111	int	(d)	y	char	(f)	L4V 5E6	String

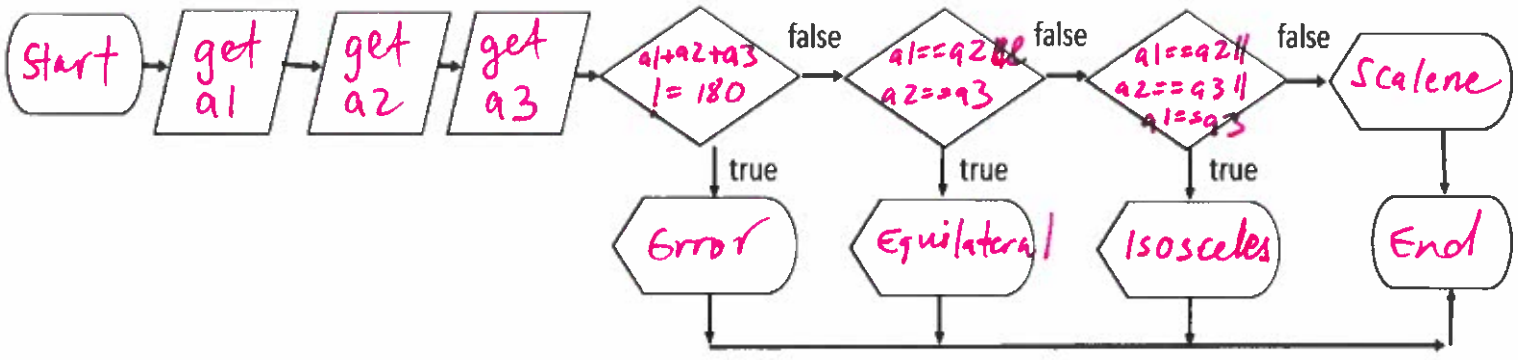
13. Match the flowchart symbol with its description AND the statement that might appear in it. /7

E	Process	C	`System.out.println("Programming!");`
D	Terminal	A	`x >= 90`
B	Input	B	`int age = IO.inputInt("Age? ");`
C	Output	E	`tax = total * 0.13;`
A	Decision	D	End

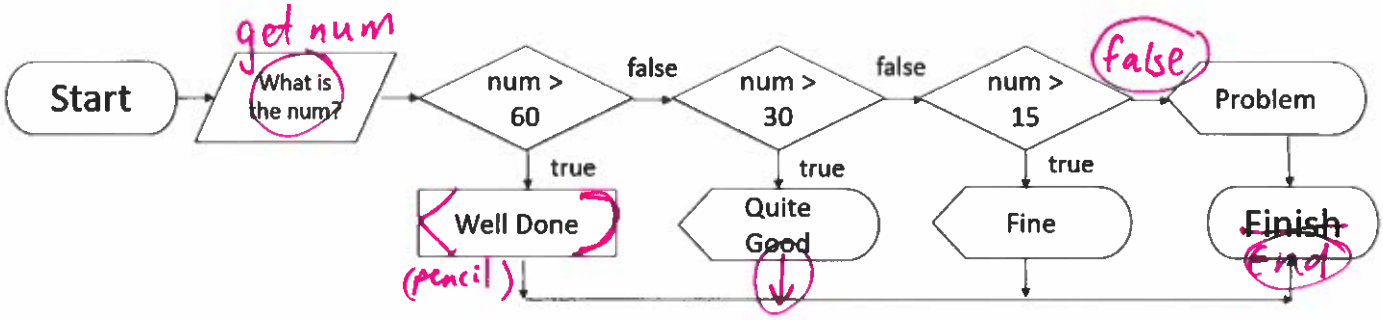
14. Use the code to fill in the blanks on the flow chart below. /5

The Code:

```
int a1 = IO.inputInt ("Angle #1? ");
int a2 = IO.inputInt ("Angle #2? ");
int a3 = IO.inputInt ("Angle #3? ");
if ((a1 + a2 + a3) != 180)
    System.out.println ("Error");
else if (a1 == a2 && a2 == a3)
    System.out.println ("Equilateral");
else if (a1 == a2 || a2 == a3 || a1 == a3)
    System.out.println ("Isosceles");
else
    System.out.println ("Scalene");
```



15. Circle **and correct** 5 errors in this flowchart. /5

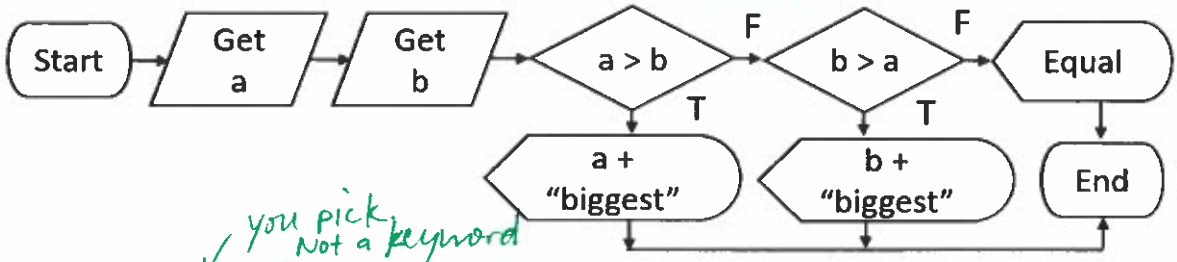


Application

Sample runs of the program are shown.

The user input is underlined. Format output **exactly** as shown.

16. Write code that would result from this flowchart. (a and b are integers) /5



you pick, Not a keyword

```
public CompareAB (){
int a = IO.inputInt("Enter the first number: ");
int b = IO.inputInt("Enter the second number: ");
if(a > b)
    System.out.println(a + " biggest. ");
else if(b > a)
    System.out.println(b + " biggest ");
else
    System.out.println("Equal. ");
}
```

Can vary.

17. A day has 86,400 seconds, an hour has 3,600 seconds and a minute has 60 seconds. Calculate the number of days, hours, minutes and seconds from a very large number of seconds. /6

```
How many seconds? 286463
That is 3 days, 7 hours, 34 minutes and 23 seconds.
```

```
int sec = IO.inputInt("How many seconds? ");
int day = sec / 86400;
sec = sec % 86400;
int hour = sec / 3600;
sec = sec % 3600;
int min = sec / 60;
sec = sec % 60;
System.out.print("That is " + day + " days, " + hour + "hours, ");
System.out.println(min + " minutes and " + sec + " seconds. ");
```

18. Dorothy Vaughn is running in a by-election against Mary Jackson.
Make a program that asks how many votes each candidate received. The user input is underlined.
Calculate the percentage of votes for Vaughn and for Jackson.
Also, print out who won the election: **Don't forget that they might tie.** /12

Hint: Remember \t and \n.

Format output **exactly** as shown.


```
Enter the number of votes for Vaughn: 1276
Enter the number of votes for Jackson: 952

Total Votes:    2228
Vaughn:         57.27 %
Jackson:        42.73 %

Vaughn won.
```

```
int v = IO.inputInt("Enter the number of votes for Vaughn: ");
int j = IO.inputInt("Enter the number of votes for Jackson: ");

int total = v + j;
double v_percent = v * 100 / total;
double j_percent = j * 100 / total;

System.out.println("\nTotal Votes:\t" + total);
System.out.println("Vaughn:\t" + v_percent + "%");
System.out.println("Jackson:\t" + j_percent + "%");
System.out.println();

if (v > j)
   System.out.println("Vaughn won.");
else if (j > v)
   System.out.println("Jackson won.");
else
   System.out.println("They tied.");
```