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Computer Programming I

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**Computer Programming Review Part 1**

***STANDARD 1***

* *1.1) Name and explain one hardware term and one software term you are least familiar with.*
* Hardware: Network Interface Card (NIC) = circuit board that is installed in a computer to connect it to a network, allowing it to communicate over the web, usually ethernet.
* Software: Cloud = Network diagram describing a WAN like data centers, but now utilized as a synonym to the internet.
* *1.2) What does a breakpoint do?*
* Halts the program up to a line of code wherever one implements the breakpoint, usually utilized to help with debugging.
* *1.3) When debugging, what are you normally monitoring?*

Most monitor for any glitches or errors in code such as syntax, run-time, or logic errors.

* *1.4) What does it mean to “step through” an application?*
* Debugging by navigating through code statements to seek out and fix errors (syntax, run-time, logic).
* *1.5) Describe and give an example of a syntax error.*

Error in the source code of a program; must conform to the language utilized.

Incorrect: system.out.println(Hello World)

Correct: system.out.println(“Hello World”);

* *1.6) Describe and give an example of a run-time error.*
* Error that occurs while the program is running.

It looks like an alert window that says there was a program crash or runtime error and is usually due to a logic error.

Incorrect: float average(int a, int b)

{

Return a + b / 2;

}

Correct: float average(int a, int b)

{

Return (a + b) / 2.0;

}

* *1.7) Describe and give an example of a logic error.*
* Error in the program’s source code due to a code that produces the wrong output.

Incorrect: float average(int a, int b)

{

Return a + b / 2;

}

Correct: float average(int a, int b)

{

Return (a + b) / 2.0;

}

* *1.8) When an application is compiled, what is it changed to?*

An application is changed to a text-based, human-readable format that can be opened and edited by programmers.

* *1.9) Name and describe the terms/concepts you are least familiar with in Standard 1 (at least one).*

Interpreted Language = Programming language which most of its implementations execute instructions directly without previously compiling a program into machine-language instructions.

***STANDARD 2***

*2.1) Name and give examples of three string literals in your language.*

String a = “abc”;

String b = “bcd”;

String c = “cde”;

*2.2) Describe the difference between an operator and an operand.*

Operator = Mathematical symbols like +, -, /, or \*.

Operand = Integer or float input into an equation with operators to form an equation.

*2.3) Write the line of code that constitutes your language “entry point.”*

public static void main(String[])

private static void main(String[])

*2.4) Name and describe what it means to plan an app including placeholders for named classes and functions/methods.*

Declare: Specify properties of an identifier (classes, constants, functions, methods, variables, etc.).

*2.5) Write a method in your language that takes in a decimal and converts it from Fahrenheit to Celsius and returns the new value.*

import java.util.Scanner;

public class Fahrenheit\_Celsius {

public static void main(String[] args) {

double Celsius, Fahrenheit;

Scanner s = new Scanner(System.in);

System.out.println(“Enter temperature in Fahrenheit:”);

Fahrenheit = s.nextDouble();

Celsius = (Fahrenheit - 32) \* (0.556);

System.out.println(“Temperature in Celsius: “ + Celsius);

}

}

*2.6) Cite a good and bad example of a number variable, a method name and a class name.*

Bad: public class test age {

public void puppy age() {

int age = 0;

age = age + 7.333;

System.out.println(“Puppy age is: “ + age);

}

}

Good: public class TestAge {

public void puppyAge() {

int age = 0;

age = age + 7;

System.out.println(“Puppy age is: “ + age);

}

}

*2.7) Site how single line comments and multiple line comments are accomplished in your language.*

Single Line Comments: // Comment.

Multiple Line Comments: /\* Comment.

Comment.

Comment. \*/

*2.8) Name and describe the terms/concepts you are least familiar with in Standard 2 (at least one).*

Entry Point: Control is transferred from an operating system to a computer program where the processor enters a program or code and where execution begins.

***STANDARD 3***

*3.1) Write a sample line of code naming and initializing each of your languages’ primitive data types.*

Boolean, byte, char, short, int, long, float, double.

*3.2) Write an line of code takes information from the user and assigns it to a named String variable.*

import java.util.Scanner;

public class test {

public static void main(String[] args) {

int age = 0;

Scanner s = new Scanner(System.in);

System.out.println(“Are you between thirteen and eighteen years of age?”);

if (“Yes.”) {

int age = new String(“teen”);

}

}

}

*3.3) Write a line of code that casts a number as a String.*

int number = 333;

String stringNumber = “333”;

*3.4) List and describe all known operators in your language.*

= = assignment

+ = add or positive

- = subtract or negative

\* = multiply

/ = divide

% = percent

++ = positive increment by one digit

-- = negative increment by one digit

! = inverts Boolean or not

== = equal to

!= not equal to

> = greater than

>= = greater than or equal to

< = less than

<= = less than or equal to

&& = conditional and

|| = conditional or

?: = if-then-else

instanceof = compare

~ = unary bitwise complement

<< = signed left shift

<<< = unsigned left shift

>> = signed right shift

>>> = unsigned right shift

& = bitwise and

^ = bitwise exclusive or

| = bitwise inclusive or

*3.5) Write a line of code setting a reference variable.*

object o = “thing”;

*3.6) Name and describe the terms/concepts you are least familiar with in Standard 3 (at least one).*

Modulus: Modulo operation that finds remainder after division of a number by another.

***STANDARD 4-1: BOOLEAN LOGIC***

*4.1) Site all of your languages logic operators.*

&& = conditional and

|| = conditional or

! = inverts Boolean or not

*4.2) Site all of your languages relational operators.*

> = greater than

>= = greater than or equal to

< = less than

<= = less than or equal to

== = equal to

!= = not equal to

*4.3) Write a complex if statement checking “or” conditions.*

if(!A || !B) {

Return “A or B failed.”;

}

if(!C || !D) {

Return “C or D failed.”;

}

if(!E || !F) {

Return “E or F failed.”;

}

// Etc.

*4.4) Write a complex if else statement checking “and” conditions.*

if(A) {

if(B) {

if(C) {

// Etc.

} else {

Return “C failed.”;

}

} else {

Return “B failed.”;

}

} else {

Return “A failed.”;

}

*4.5) Write a sample switch, case, default statement.*

switch(variable) {

case A:

statement\_1();

statement\_2();

break;

case B:

statement\_3();

statement\_4();

break;

}

***STANDARD 4-2: ITERATIONS***

*4.6) Write a for loop that will print numbers 1-100 to console.*

for(int i = 1; i <= 10; i++) {

for(int j = 1; j <= 100; j++) {

System.out.println((i \* j) + “ “);

}

System.out.println();

}

*4.7) Write a sample while or do while statement.*

class whileDem {

public static void main(String[] args) {

int count = 1;

while(count < 11) {

System.out.println(“count is: “ + count);

count++;

}

}

}

*4.8) What is a nested loop; give an example.*

Nested Loop: Placing a loop inside of another loop.

for(int i = 1; i <= 10; i++) {

for(int j = 1; j <= 100; j++) {

System.out.println((i \* j) + “ “);

}

System.out.println();

}

*4.9) Describe a strategy for keeping a running total in an app.*

import java.util.Scanner;

public class shop {

public static void main(String[] args) {

Scanner input = new;

Scanner(System.in);

double count, total = 0;

int choice = 0;

int sum = 0;

System.out.println(“Grocery Store Menu”);

System.out.println(“1. Bread: $3.00”);

System.out.println(“2. Chocolate: $1.50”);

System.out.println(“3. Milk: $5.00”);

do {

System.out.println(“Choose…”);

choice = input.nextInt();

}

if(choice == 1) {

total += 3.00;

}

if(choice == 2) {

total += 1.50;

}

if(choice == 3) {

total += 5.00;

}

System.out.println(“Total: $” + total);

}

}

*4.10) Name and describe the terms/concepts you are least familiar with in Standard 4 (at least one).*

Switch: Selection control mechanism to allow a value of a variable or an expression to change the control flow of a program execution.