Study guide Exam 1 cosc 117

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**Definitions**

**Errors:**

Syntax Error: An error in the program code due to misuse of the programming language.

Run-time Error: An error that occurs during a run of the program which usually causes the program to terminate prematurely.

Logic Error: This error occurs when the program is syntactically correct and there are no runtime errors but the program does not do what it was intended to do.

**Other:**

CPU: Central Processing Unit

ALU: Arithmetic and logic unit

**Important Things**

**What happens when you overload an int?**

- The value cycles around to the minimum value of an int.

**What happens when you overload a double?**

-The value turns into Infinity.

**What happens when you underload an int?**

- The value cycles around to the maximum value of an int.

**What is overloading and underloading an integer?**

-**Overloading an integer** is when you try to store a value that is too large for the integer to store.

**-Underloading** is when you try to store a value that is too small for the integer to store, that is a negative number that is too large.

**What happens when you underload a double?**

- The value turns into 0.

**What happens when you input a non-numeric string when the Scanner is doing a nextInt?**

**-Run-time error**, since it will not automatically convert a string to an int.

**What happens when you input a double when the Scanner is doing a nextInt?**

**-Run-time error**, since it will not automatically convert a double to an int.

**What happens when you input an integer when the Scanner is doing a nextDouble?**

The integer is **converted to a doubl**e, so a 3 would be converted to 3.0.

**What does ASCII stand for and what is it?**

**-American Standard Code for Information Interchange.**

-It is **a system where characters are associated with numbers.**

**What is the difference between a compiler and an interpreter? Also, discuss Java’s method.**

-A **compiler** will take a program written in a high-level language, translate it into machine language and then save the machine language program to a file that can be run on the computer.

-An **interpreter** does essentially the same thing except that it translates the high-level language to machine language one command at a time and does not save the machine language program to a file.

-**Java uses a combination of the two.** There is a compile stage that translates the Java code into byte-code that the interpreter (known as the JVM or Java Virtual Machine) runs.

**Java is a “platform-independent language.” What is a platform, what does platform-independent mean, and how does Java attain its platform independence?**

- A **platform** is an operating system, so

**platform-independent** means that the same program can be run on any operating system.

**Java** is compiled into byte-code, this byte code is then interpreted by the Java Virtual Machine (JVM). There is a JVM built for every common operating system, so Java byte-code can be run on any operating system.

**What are reserved words? Give four examples of Java reserved words.**

- A **reserved word** is a word that is used for a particular use in the programming language and cannot be redefined. Hence the programmer cannot use a reserved word as a variable name.

-There are many reserved words in Java, some we have seen thus far are *public, void, class, if, else, while, int, double, long, float, new, import*, and *static.*

**Explain the difference between high-level languages and machine language.**

**A high-level language** is human readable code that is either compiled into machine language or interpreted (or a little of both).

A **machine language** is one in which the computer can run directly.(binary)

**What is a block statement?**

A block statement is a segment of code between {}

**What are the two main components to the CPU and what do each of them do?**

**-The CPU consists of** the ALU (Arithmetic and Logic Unit) and the Control Unit.

**-The ALU** does the calculations and

**-the Control Unit** controls the running of the program.

**In object oriented programming, what are the states and what are the methods?**

**States** are the attributes of the object, data that the object stores, and

**methods** are the actions you can do on the object.

**Things to remember**

**Variable names:**

Can’t have spaces in them

Can’t start with numbers

Can’t be reserved words

Can’t have special characters in them such as:\*&%

**What do each of the following do, &&, | |, !, and ^?**

&& - Logical and.

|| - Logical or

! - Logical not

^ - Logical xor

**What are the four basic types of instructions**

1. Assignment

2. Read

3. Write

4. Call to a procedure

**What are the two basic types of control instructions?**

1. Conditional Statement
2. Loop

**Things to remember for tracing and coding**

*min/max commands*

*Double=*number with one decimal place ex:2.0

*int*=integer no decimal places

*Float=*number with decimal places

*char=*single letter ex: char a

*if ,else and if else statements=if*  starts *if else* in the middle *else* at the end

*Boolean*: True or false value

*Int num1=keyboard.nextInt();*

*while*

*keyboard.nextline();*

**Important lines of code to remember**

import java.util.Scanner;

public class Exam1Code1 {

public static void main(String[] args) {

Scanner keyboard = new Scanner(System.in);

System.out.print( );

System.out.println( );

double variable=kb.nextdouble();

int #

string variable=keyboard.next();