Yuan Zhuang

CS4337.501

1/29/2019

Assignment 1

Chapters 1 & 2

Due: 02/01 11:59 p.m.

Submit your answers to eLearning in a word document.

**Part A Short Answer**

1. What are the advantages of using an interpreter?

Programs that written in high-level languages such as JAVA, C++/C are either executed by an interpreter or should converted to the machine code and compile by the compiler. The main advantage of using an interpreter is that it executed code directly and allowing easy implementation of many source-level debugging operations. The source-level error are the errors such as run-time error. The other advantages included its not a target program, and simpler to develop. If the commands are not executed repeatedly, the interpreter will be very useful.

1. What does it mean for a program to be reliable?

A program is said to be reliable if it performs its specifications under all conditions, which means the program should be solid and do its work under different circumstances. The type checking, exception handling, readability, writability and aliasing in a program are significant to its reliability.

1. What is aliasing?

Aliasing describes a situation that a data location in memory can be accessed through different symbolic names in the program, which means two or more distinct names can be used to access the same data memory cell in a program.

1. How can user-defined operator overloading harm the readability of a program?

A program build-in operators have their own precisions, and compiler works under these specific precisions. The user-define operator will cause the compiler could not recognize the operators and cause overloading harm in a program.

1. What is the disadvantage of having too many features in a language?

If a program has too many features, then there is possibility to make program complier complicated, and with too many definition and confused logic will make the program hard to read and debug. It will be hard to guarantee the reliability of the program.

1. What is one example of a lack of orthogonality in the design of C?

In C language, there are many exceptions. For example, structures may be returned from a function, an array inside a structure can be returned, a member of a structure and array can be any data type except void, and everything should be passed by value except array. When thinking about lack of orthogonality, we should think about whether changing the meaning of A will that affect the meaning of B or not, such as the expression A+B, its good to go if that just adding up values, but if A is a pointer points to a float, then B supposed to be re-scaled before adding up to A. In this case, the lack of orthogonality happened.

1. Why is exception handling important part of current languages?

In a real-world project, a program can be written by many different persons, an exception handling will make it easier to maintain and debug and make the end-user (technique naive users) know what to do next if the program goes wrong.

1. Which produces faster program execution, a compiler or a pure interpreter?

A compiler, usually a pure interpreter will slow the execution because it translates each line to machine code each time.

1. Why is the von Neumann bottleneck important?

The von Neumann bottleneck defined that computer system have limited throughput due to the relative ability of processors compared to top rates of data transfer, and because of this definition, many computer scientists work on analyzing and designing new structures by the motivation of this rule.

1. What is Orthogonality and what is the disadvantage of having too much orthogonality?

The orthogonality can be simply described as changing A will not affect B. Too much orthogonality without restriction of all the types will cause a program hard to detect errors and make it unnecessary complex as well.

**Part 5 Matching**

Select the best choice for the following problem. Fill your answer in the Box Below.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.  Cobol | 2.  C | 3.  Lisp | 4.  HTML | 5.  PHP | 6.  Java | 7.  Syntax | 8  Fortran | 9  Algol | 10  Fortran |
| 11  Reliability | 12  Readability | 13  Writability | 14  Semantics | 15  Lisp | 16  Aliasing | 17  Memory | 18  Prolog | 19  Orthogonality | 20  Abstraction |

(1) abstraction, (2) aliasing, (3) Algol, (4) C, (5) Cobol, (6) compiler, (7) cost, (8) concurrent, (9) CPU, (10) derivation, (11) encapsulation, (12) Fortran, (13) HTML, (14) JSF, (15) JSP, (16) inheritance, (17) imperative, (18) Java, (19) Java EE, (20) Lisp, (21) memory, (22) ObjectDB, (23) OOP, (24) orthogonality, (25) parallel, (26) parser,

(27) PHP, (28) Prolog, (29) readability, (30) reliability, (31) semantics, (32) syntax, (33) thread, (34) writability

(1) The major commercial language for the period 1960 through the 1990s was \_\_\_\_\_\_.

(2) \_\_\_\_\_\_ was developed as a systems programming language for the development of UNIX.

(3) The major AI language for the period 1960 through the 1990s was \_\_\_\_\_\_.

For Web languages, (4) \_\_\_\_\_\_\_ is for hypertext, (5) \_\_\_\_\_\_ is the most popular server-side programming language, and (6) \_\_\_\_\_\_\_ is the OO programming language introduced in 1995.

(7) What a program looks like is called its \_\_\_\_\_\_.

(8) John Backus was instrumental in the development of the first 3rd generation programming language: \_\_\_\_

(9) \_\_\_\_\_ is a first machine-independent language and first language whose syntax was formally defined (BNF)

(10) The major scientific language for the period 1960 through the 1990s was \_\_\_\_\_.

(11) \_\_\_\_\_\_ is for the evaluation criteria for the conformance to specifications (i.e., performs to its specifications)

(12) \_\_\_\_\_\_ is the evaluation criteria for the ease with which programs can be read and understood

(13) \_\_\_\_\_\_ is for the evaluation criteria for the ease with which a language can be used to create programs

(14) The execution or meaning of each feature in a language is called its \_\_\_\_\_\_.

(15) One of the Functional languages is \_\_\_\_\_\_\_

(16) \_\_\_\_\_ is about the presence of two or more distinct referencing methods for the same memory location

(17) \_\_\_\_\_ is the key component for stored program concept and is usually separated from CPU.

(18) One of the logic languages is \_\_\_\_\_\_

(19) This \_\_\_\_\_\_ feature or criteria is about a relatively small set of primitive constructs which can be combined in a relatively small number of ways, and every possible combination is legal

(20) The support for \_\_\_\_\_\_ is about the ability to define and use complex structures or operations in ways that allow details to be ignored

**Part C Test Sign Up**

Read the testing center student guidelines on the testing center website and print your name at the bottom of the page stating that you have read the rules. After reviewing, the guidelines please go and sign up for all three class exams. Choose a time for each exam for the following dates:

Exam 1: 2/12

Exam 2: 4/2

Exam 3: 4/30

After registering for each exam take a screen shot or multiple screen shots showing you are registered for the exam. Paste the screen shots into your homework assignment.

Sign up for exams ASAP via this <http://www.utdallas.edu/studentsuccess/testing-center/>

**Student Guidelines:** <http://www.utdallas.edu/studentsuccess/testing-center/tc-student/>

**IMPORTANT:**Cutoff time for making an appointment is 48 hours prior to the exam date. Students MUST reserve their seat at least 48 hours prior to the exam date. Registration will close and students will NOT be able to register or make changes to their appointment time after the 48-hour cutoff time. **Walk-ins are not allowed.** Students walk-in without an appointment when the center is full, will be referred back to their instructor for rescheduling for make-ups. Please note: Appointment times/seats fill up quickly. So please reserve your seat early in advance**.**

**Effective January 1, 2018,** your Comet Card is the **ONLY** accepted form of ID by the UT Dallas Testing Center. **NO** other forms of ID will be accepted (electronic or photocopy of Comet Card will NOT be accepted). You WILL NOT be able to test without the UT Dallas Comet Card. NO EXCEPTIONS! If you do not have a Comet Card, **you must obtain one prior to your exam.** Please visit the Comet Card Office at Student Service Addition (2nd floor), Room SSA12.324, phone: 972-883-2495, email: [cometcard@utdallas.edu](mailto:cometcard@utdallas.edu)

**I have read the Testing Center Policy (Type Name):** YUAN ZHUANG

Paste your screen shots here.

