Name_____ Student ID_____

1. Mention five things an organization can do to reduce the risk in software development.

a. _____
b. _____
c. _____
d. _____
e. _____

2. Draw a UML diagram that illustrates the file system of UNIX as described below: Directories and files have names. A directory may contain three things: Directories, files and symbolic links. A symbolic link has a name and refers to a file or directory that is in the same directory or some other directory. A file or directory belongs to only one parent directory.

3. What are the consequences of using inheritance (as against aggregation)? Give an example when you would use inheritance over aggregation. Also give an example when you would use aggregation over inheritance. The examples should illustrate the benefit of one over the other.

4. What is an abstract base class? What is its benefit? Give an example of writing an abstract base class in a language of your choice.

5. What is the UML notation for each of the following:
    a. Package
    b. Static attribute
    c. Public method
    d. Protected method
    e. Derived attribute
6. What are the various artifacts that you develop in the use case model and the analysis model?

7. What are the stereotypes in the Analysis model? Show their UML notation. What does each of these represent?

    _____
    _____
    _____

8. Draw the use case diagram showing actors, use cases and relationship between them for the following problem statement:

A Bank wants you to build a software system for an ATM which will be connected through a network. A Customer will approach the ATM and insert the bank ATM card and enter the pin number. The customer will then be allowed to choose among the accounts that the customer has by displaying the account number and type of the account. Once the customer chooses an account, he/she may check the balance on the account and request for a printed copy (receipt). The customer may also withdraw cash, not exceeding the amount of $200 per day. Customer may also transfer funds between his/her own accounts. A banker may connect remotely to the ATM and get reports on daily transactions, like the accounts processed, amount dispensed, cash left on the machine, etc. An operator may access the ATM to add money and fill in printer paper at any time.

9. Write the flow of events for one major use case in problem# 8.

10. Lets say I have a class called Person. It has a final (const in C++) reference to Brain. I want to make a copy a Person object. Should I write a copy constructor like people do in C++ or should I write clone as people do in Java? Explain.