Cairo University
Faculty of science
Mathematics Department
120 min.

Final Exam (Fall 2015)
Software Development
Comp 303

Answer the following questions. The total credit is 60. **The Exam is in six pages**

Question (1) (20 points)
Fill in the following table using "T" for true statements and "F" for the falses:

1	2	3	4	5	6	7	8	9	10

11	12	13	14	15	16	17	18	19	20

1. The architectural Design is used to identify the overall structure of the system.

2. The process of understanding and defining what services are required for a system and identifying the constraints on the system's operation and development is called Software Development.

3. In the Software Engineering Code of Ethics, the Self principle means to give yourself enough time to rest and not to be overloaded.

4. The Pipe and Filter architecture is most suitable for interactive systems.

5. Boehm's Spiral Model is a risk-driven software process model.

6. In Boehm's Spiral Model each loop contains validation of requirements.

7. In the Software Engineering Code of Ethics, Software engineers shall work consistently to the interest of the public.

8. The four fundamental activities that are common to all software practices are: Specification, Development , Validation and Evolution

9. The Box and line diagram contains all the details of the requirements, specifications and design that are needed to convince the stakeholders.

10. The Pipe and filter architecture is most suitable for interactive systems.

11. A good software should be general purpose one

12. A repository architecture consists of multiple data stores; one for each subsystem.

13. One of the problems in evolutionary developing a model is that it lacks the process visibility.

14. In systems with a long life, development costs may be several times maintenance costs.

15. Object testing is for Individual functions or methods within an object.

16. The architecture that is used when large amounts of data are to be shared is Pipe and filter architecture.

17. The incremental development model lower the risk of the overall project failure.

18. Risk Analysis is not a stage in the Reuse Oriented Model.

19. In XP, we write the programs and then write the code to test them.

20. The agile Fundamentals includes satisfying the stakeholders

Question (2) (20 points) Short Answers

A. **(4 points)** What are the problems of Incremental Delivery?

B. **(3 points)** From an ethical viewpoint, what are the advantages of agile development over plan-driven development?

C. **(3 points)** What are the stages of Reuse-Oriented Software Engineering?

D. **(2 points)** In the Software Engineering Code of Ethics what is the Judgment principle?

E. **(2 points)**. Explain the concepts validation and verification in a general context.

F. **(3 points)** What does it mean to do verification of a requirement specification?

G. **(3 points)** What benefits can we have from making a formal requirement specification?

Question (3) (20 points) Answer the following questions in details.

A. (4 points) Explain why it is <u>not</u> necessary for a program to be completely free of defects (errors) before it is delivered to its customers.

B. (4 points) Explain why incremental development is the most effective approach for developing business software systems. Why is this model less appropriate for real-time systems engineering?

C. (4 points) Give a description of the Scrum process.

D. (8 points) Consider an ATM bank machine:

a. Choose a suitable model from (Context, Interaction, structural, behavioral) to represent this system , Explain your choice from your perspective.
b. Draw an activity diagram that models the data processing involved when a customer withdraws cash from the machine.
c. Draw a sequence diagram for the same system.
d. Explain why you would develop both activity and sequence diagrams when modeling the behavior of a system

Best Wishes
Areeg Abdalla