《软件工程概论》平时作业参考答案

Chapter 1 Why Software Engineering ?

Part 1 Fill Blanks

1. Programs (Instruction), data (structures), documents
2. systematic, disciplined, measureable development, operation, and maintenance
3. analyzing synthesizing
4. the software product, the process of development software product, in business environment
5. customer， client, user
6. analysis, design, construction, verification, management

Part 2 Brief Description

Briefly describe the roles of analyst, designer, programmer, tester, and trainer.

答案：

1、 the requirement analyst work with customer, break down what the customer wants into discrete requirement.

2、the designer generate the system-level description of what the system is to do

3、the programmer write line of code that implement what requirement specify.

4、the tester catches faults that programmer overlook

5、the trainer shows users how to use the system

Chapter 2 Modeling the Process and Life Cycle

Part 1 Fill Blanks

1、process, steps, activities, constraints, resources

2、Product, lifecycle

3、conception, implementation, delivery, use, maintenance

4、requirement analysis and definition, system design, program design, program implementation, unit testing, integration testing, system testing, system delivery, maintenance

5、requirement analysis, system design, program design, coding, unit & integration testing, system testing, acceptance testing ,operation & maintenance

6、validation, verification

7、iteration , rework

8、risk, risk control

9、prototype

Part 2 Brief Description

Briefly describe the advantage and disadvantage of the WatterFall model.

答案：

Advantage: As described in the bottom paragraph of test book P49.

Disadvantage of the WatterFall model: See the PPT of this section.

Chapter 3 Planning and Managing the Project

Part 1 Fill Blanks

1. Project schedule, phases, tasks , activities
2. Time line
3. Items
4. Activity, milestone
5. Gantt chart
6. Real time ,actual time ,available time, slack time, float time, available time , real time
7. CPM
8. schedule

Part 2 Brief Description

1. See middle items in the Page 83 of the test book.(four types of deliverable)
2. See middle items in the Page 96 of the test book.(ten aspects)
3. Exercise 2

No	Activity leading to	Precursors
1	A	
2	B	A
3	C	A
4	D	A,B
5	E	A
6	F	A,C
7	G	A,E
8	H	A,C,E,F,G
9	I	A,B,D
10	J	A,B,D,E,G,I
11	K	A..J
12	L	A..K

No	Activity leading From..to..	Earliest Start Time	Latest Start Time	Slack
1	A..B	1	1	0
2	B..D	4	4	0
3	B..I	4	5	1
4	D..I	9	9	0
5	I..J	11	11	0
6	A..C	1	5	4
7	C..F	6	10	4
8	F..H	9	13	4
9	A..E	1	4	3
10	E..G	5	8	3
11	G..H	8	14	6

12	G..J	8	11	3
13	H..K	10	14	4
14	J..K	13	16	3
15	J..L	13	13	0
16	K..L	15	18	3
17	L	21		

Critical Path: A-B-D-I-J-L 20 days

1. Exercise 3

Critical Path: A-B-C-E-D-I-K-L

24 days

Chapter 4 Capture the Requirements ?

Part 1 Fill Blanks

1、Expression, software behavior

2、Elicitation, analysis, specification, validation

3、clients, customers, users, domain experts, market researcher, lawyers or auditors, software engineers.

4、stakeholders wants and needs, domain models, current situation models,Reusable requirements, suggested type of requirements, existing documents, current organization and systems.

5、functional requirements, quality (non-functional)requirement, design constrains, process constrains

6、requirement definition , requirement specification.

7、entity, attribute, relation

8、process, data flow, data store, actor

9、boundary

10、throwaway prototype, evolutionary prototype

Part 2 Brief Description and Exercises

1、See the Page 146-147 (Fourth Edition)

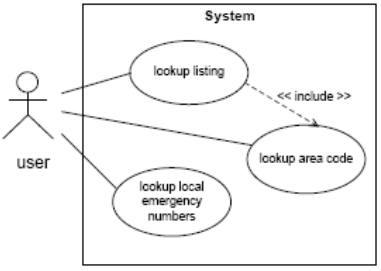
2、See the page 148-149 (Fourth Edition)

3、See the page 158 (Fourth Edition)

4、See the page 192 (Fourth Edition)

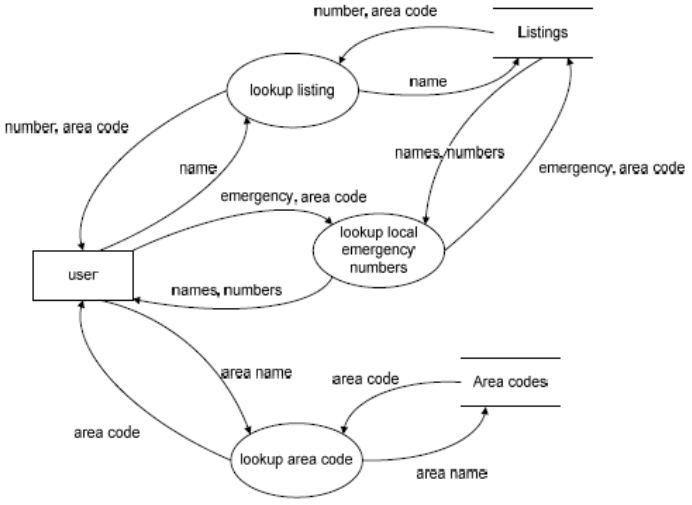
5、Exercise 12

UML use-case diagram for an on-line telephone directory.



Exercise 13

Data-Flow diagram to illustrate the functions and data-flow For an on-line telephone directory system



Chapter 5 Design the Architecture

Part 1 Fill Blanks

1. resulting
2. components, connectors, constrains
3. filter,pipe.
4. Server, client
5. peer
6. subscribing, pubulish
7. central data store, data accessing

Part 2 Brief Description and Exercise

1. See the Figure 5.4 and its description..
2. The answer is figure 5.9 in the page 243(Fourth Edition)
3. (1) Piper and Filter:
   MIS system of XIDIAN University
   (2) Client/Server:
   Most transaction processing system(事务处理系统)
   Eg. Bank System
   (3) Peer to Peer:
   Military Individual equipment system
   (4) Publish Subscribing:
   (1) Field (Reiss 1990),
   (2) Subscribed Weather Forecast
   (5) Repositories
   Intelligence Diagnostic and Cure System
   (6) Laying
   (1) Unix Operating System
   (2) OSI model for network communication

Chapter 6 Design the Modules

Part 1 Fill Blanks

1. Individual component, write code, implement
2. principles , conventions
3. sharp boundary
4. decomposing
5. separation of concern
6. See the Fig.6-2 (Fourth Edition P. 298)
7. See the Fig.6-5 (Fourth Edition P. 300)
8. stamp coupling, data coupling
9. temporal

Part 2 Brief Description and Exercises

In next text, the No. 4 is the reference answer for Exercise 7
and No.5 is the reference answer for Exercise 8

4. Coincidental: a component that prints the current time or gives a directory listing, depending on the user input

   Logical: a component that prints a document or writes it to a file

   Temporal: a component that logs users into the system, checks their mail, and shows them the calendar for the day

   Procedural: a component that reads a user database query, checks the availability of the database, then searches for the requested information

   Communicational: a component that collects disk access housekeeping data while accessing user-requested data

   Sequential: a component that requests a user password, reads the password, checks the password, and initiates the user's session

   Functional: a component that validates a user password and does nothing else

5. Content: component 1 reads in a stream of characters and updates a variable, which is internal to component 2, that keeps track of the number of lines that have been read. Component 2 uses this variable to calculate when a new page needs to be started.

   Common: components 1 and 2 are as above, but the line counter variable is in a shared data space.

   Control: component 1 reads in a stream of characters, keeping track of the number of lines read, and invokes component 2 whenever enough lines have been read to start a new page.

   Stamp: component 1 performs a validity check on a complicated data structure, then passes that structure to component 2 which performs a calculation based on the data in that structure.

   Data: component 1 performs a validity check on a complicated data structure, then passes individual elements of the data structure that are needed by component 2 to complete its calculation.

Chapter 7 Writing the Programs

Part 1 Fill Blanks

1. coorperation, coordination
2. style, format, content standard, read
3. control structure, algorithm, data structure
4. documentation, internal documentation, external documentation
5. who, what, why, when, where, how

Part 2 Brief Description and Exercise

1、See the six aspects in the page 387(Fourth Edition)
2、Reference answer for exercise 6.

6. Comments:

```
/* First, calculate the discrimant, b² - 4ac */
{
/* Case 1: The discriminant is less than 0, so there are no real roots - output
a message */
{
/* Case 2: The discriminant is equal to 0, so there is just one real root -
calculate and output the root */
{
/* Case 3: The discriminant is greater than 0, so there are two real roots -
calculate and output the roots */
{
```

External documentation:

The algorithm for calculating the roots of a quadratic equation has two steps. The first step is to calculate the discriminant, which is defined by a formula involving the coefficients of the equation. The second step depends on the value of the discriminant calculated in the first step. If the discriminant is less than zero, this indicates that the equation has no real roots, and a message to that effect is output. If the discriminant is equal to zero, then there is one real root. This root is calculated using the quadratic formula and output. If the discriminant is greater than zero, then there are two real roots. In this case, both roots are calculated using the quadratic formula and output.

Chapter 8 Design the Modules

Part 1 Fill Blanks

1. Mistakes, inside, developer
2. Departure, outside, user
3. Determining, making changing
4. algorithm or logic
5. implementation, decimal
6. documentation
7. capacity
8. function
9. performance
10. acceptance
11. installation
12. feed, output
13. structure
14. input data
15. component driver
16. component

Part 2 Brief Description and Exercises

1. See the content of the P.413 of the text book .
2. See the content of the P.422 of the text book .
3. Top-Down: Test: A
   Test: (A,B,C,D,E)
   Test: (A,B,C,D,E,F,G,H,I,J,K)
   Test: (A..N)
   Bottom-Up: Test: (E,G,H,J,K,L,M,N)
   Test: (F,L) and (I,M,N)
   Test: (B,F,L,G),(C,H), and (D,I,J,K,M,N)
   Test: (A..N)

4. (1) Statement Testing: [2,0,4]
   (2) Branch Testing: [2,0,4]; [1,1,1]
   (3) Test Path:
   a-c-e
   a-b-d

a-b-e
a-c-d

Chapter 9 Testing the System

Part 1 Fill Blanks

1. Components
2. Conditions, time
3. point
4. time ,procedure, resources
5. alpha, beta

Part 2 Brief Description and Exercise

See the content of P.489, especially the content of Figure 9.10(Fourth Edition)

Chapter 10 Delivering the System

Part 1 Fill Blanks

1、User, operator

Part 2 Brief Description and Exercise

1、See the content of Table 10.1of P.520 (Fourth Edition)
2、See the content of PP520-521. (Fourth Edition)

Chapter 11 Maintaining the System

Part 1 Fill Blanks

1、Change
2、Formally
3、Implementation
4、Corrective
5、Adptive
6、perfective

Part 2 Brief Description and Exercise

See the 10 points listed in Page 550-551 (Fourth Edition) .