



**CS605 – Soft Engendering II**  
**Solved Subjective**  
**From Final Term Papers**

**16 July, 2013**

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PSMD01

## CS605 - Final Term Papers Fall 2012

### characteristics of risk

**Answer: - (Page 84)**

A risk has two characteristics:

- Uncertainty – the risk may or may not happen
- Loss – if the risk becomes a reality, unwanted consequences or losses will occur.

### types of reviews

**Answer: - (Page 110)**

There are many types of reviews. In general they can be categorized into two main categories namely informal and formal technical reviews.

### when a system called legacy system

**Answer: - (Page 134)**

A system is considered to be a legacy system if it has been in operation for many years. A legacy system has many components. These include business processes, business rules, application software, application data, support software, and system hardware.

### diff btw synchronous and open paradigm

**Answer: - (Page 32)**

- **open paradigm**—attempts to structure a team in a manner that achieves some of the controls associated with the closed paradigm but also much of the innovation that occurs when using the random paradigm
- **synchronous paradigm**—relies on the natural compartmentalization of a problem and organizes team members to work on pieces of the problem with little active communication among themselves

دنیا میں سب سے مشکل کام اپنی اصلاح اور سب سے آسان کام دوسروں پر نکتہ چینی کرنا ہے

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**If SCM is not its proper place then what are disadvantages?**

**Answer: - (Page 119)**

Software configuration management (SCM) is one of the five KPA required for an organization to be at CMM level 2. That means, according to SEI, effective project management is not possible without having a proper SCM function in place.

The basic idea behind SCM is to manage and control change. As mentioned by Bersoff, no matter where you are in the system life cycle, the system will change, and the desire to change it will persist throughout the life cycle. It is therefore essential that we manage and control it in a fashion that this continuous change does not convert into chaos.

**requirement attributes**

**Answer: - (Page 127)**

We need to tag requirements with certain attributes in order to manage them in an orderly fashion. Attributes are used to establish a context and background for each requirement. They go beyond the description of intended functionality. They can be used to filter, sort, or query to view selected subset of the requirements. A list of possible attributes is enumerated as below:

1. Requirement ID
2. Creation date
3. Created by
4. Last modified on
5. Last modified by
6. Version number
7. Status
8. Origin
9. Subsystem
10. Product Release
11. Priority

## CS605 - Final Term Papers Fall 2012

**2 Marks**

**Why in the software engineering measurements are collected?**

**Answer: (Page 65)**

**Because** Measurement helps in identification of the problem as well as in determining the effectiveness of the remedy. A software engineers collects measures and develops metrics and indicators.

اللہ کا خوف سب سے بڑی دانائی ہے

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**Fault tree can be used to predict the chain of events?**

**Answer: (Page 117)**

Analysis techniques such as fault tree analysis can be used to predict the chain of events that can cause hazards and the probability that each of these events will occur to create the chain.

**“Message chain” can be a bad smell in the coding justifies it with reason?**

**Answer: (Page 144)**

A client asks an object for another object and then asks that object for another object etc. Bad because client depends on the structure of the navigation

**CCB stands for what?**

**Answer: (Page 124)**

CCB stands for Change Control Board

**Marks 3...**

**Write down the guide line to make a review meeting success full?**

**Answer: (Page 113)**

The followings are guide lines to make review meeting successful:

- Avoid drift
- Limit debate and rebuttal
- Enunciate problem areas but don't try to solve all problems
- Take written notes
- Limit the number of participants and insist upon advanced preparation
- Develop a checklist for each product that is likely to be reviewed
- Allocate resources and schedule time for FTRs
- Conduct meaningful training for all reviewers
- Review your early reviews
- Determine what approach works best for you

**What characteristics of extreme programming make it different to the other life cycle models?**

**Answer: (Page 23)**

One very important feature of eXtreme programming is the concept of pair programming. In this, a team of two developers develop the software, working in team as a pair to the extent that they even share a single computer.

**If the requirements are not traceable then what will be the impact on the requirement management?**

**Answer: (Page 133)**

Requirement traceability is a very important consideration for requirement management. It is really hard to manage requirements that are not traceable.

5 marks...

A technical review meeting is attended by the Review leader, the reviewer and the producer. Write the roll of producer and the reviewer in the meeting?

**Answer: (Page 112)**

The producer informs the PM that the WP is ready and the review is needed. Review meeting is attended by the review leader, all reviewers, and the producer. One of the reviewers takes the roles of recorder. Producer walks through the product, explaining the material while other reviewers raise issues based upon their advanced preparation.

Whenever change is required, CCB decide allow to happen or deny. If it is decided that change is necessary it is needed ECO engineer change order is generated. What types of information are depicted by ECO?

**Answer: (Page 124)**

An ECO defines the change to be made, the constraints that must be respected, and the criteria for review and audit. The change control process thus involves the following steps.

- 1) need for change is recognized
- 2) change request from user
- 3) developer evaluates
- 4) change report is generated
- 5) change control authority (CCA) decides
- 6) Either step 6a or 6b is performed. Steps numbers 7 to 17 are performed only if step 6b is performed.
  - a)
    - i) change request is denied
    - ii) user is informed
    - iii) no further action is taken.
  - b) assign people to SCIs
- 7) check-out SCIs
- 8) make the change
- 9) review/audit the change
- 10) check-in SCIs
- 11) establish a "baseline" for testing
- 12) perform SQA and testing activities
- 13) check-in the changed SCIs
- 14) promote SCI for inclusion in next release
- 15) rebuild appropriate version
- 16) review/audit the change
- 17) include all changes in release

Thus, a change is incorporated in a controlled and strict manner.

بری صحبت سے تنہائی بہتر ہے اور تنہائی سے نیک صحبت بہتر ہے

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**We can ensure the 100% risk free software development process, can we guarantee that during the entire software development process there will be no occurrence of any risk. Comment with the reason?**

**Answer:- [Click here for detail](#)**

Let's be clear: there's no such thing as risk free software. You can't do anything without taking some risk. But what's easy to overlook, is that not doing something is a risk, too.

Not fixing a bug runs the risk that it's more serious than you thought; more prevalent than you thought; that it could happen to an important customer, someone in the press, or a highly valued customer – with real revenue risk. You run the risk that it collides with another, as yet unknown bug, potentially multiplying the pain.

Sometimes not releasing feels like the safest thing to do – but you're releasing software because you know something is wrong.

So what you gonna do? No business wants to accept risk, you have to mitigate it somehow. The simple, easy and wrong thing to do is to add more process. The braver decision, the right decision, is to make it easy to undo any mistakes.

**Why the “Large classes” and “Duplicate code” are considered as bad smell give at least one reason for each?**

**Answer: (Page 143)**

Large classes try to do too much, which reduces cohesion.

If you modify one instance of duplicated code but not the others, you (may) have introduced a bug!

**Is this correct that in the Reverse engineering we move from lower abstraction to the higher abstraction level?**

**Answer: (Page 139)**

Yes, Reverse engineering for software is a process for analyzing a program in an effort to create a representation of the program at a higher level of abstraction than the source code.

## **CS605 - Final Term Papers Fall 2012**

**1. Differentiate between fountain model and RUP. (2)**

**Answer: (Page 23)**

Fountain model is another object-oriented lifecycle model. In this model the circles representing the various phases overlap, explicitly representing an overlap between activities.

In Rational Unified Process (RUP) model a software product is designed and built in a succession of incremental iterations. The process emphasizes that during development, all activities are performed in parallel, however, and at a given time one activity may have more emphasis than the other.

**2. Formula for MTBF. (2)**

**Answer: (Page 116)**

$$MTBF = MTTF + MTTR$$

**3. A student claims that requirement errors are most common type of software errors and are most costly to fix. Do you agree? (2)**

**Answer: (Page 127)**

Yes, Agree.

Project success depends on good requirement management. It may be recalled that requirement errors are the most common type of software development errors and the most costly to fix. It may also be recalled that requirement errors are listed as one of the roots causes of software project failure.

**4. Which one is the ad hoc level? Level-1 or Level-2 or Level-3? (2)**

**Answer: (Page 12)**

Level 1 – Initial is also called ad hoc level.

**5. How defect removal efficiency can be increased by revision? Explain. (3)**

**Answer: (Page 68)**

Defect removal efficiency is the measure of how many defects are removed by the quality assurance processes before the product is shipped for operation.

Factors related with revision

• **Maintainability**

– Effort required to locate and fix an error in a program

• **Flexibility**

– Effort required to modify an operational program

• **Testability**

– Effort required to test a program to ensure that it performs its intended function

**6. State the advantages of waterfall model that are helpful for project managers. (3)**

**Answer: [Click here for detail](#)**

Simple and easy to understand and use.

Easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process.

Phases are processed and completed one at a time.

Works well for smaller projects where requirements are very well understood.

ایماندار کو غصہ دیر سے آتا ہے اور جلدی دور ہو جاتا ہے

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**7. Write down the format of the compound number normally used for release versioning (3)**

**Answer: (Page 122)**

Although there is no industry standard, typically, a three field compound number of the format "X.Y.Z" is used. The different fields communicate functionality information about the product release.

The first digit, X, is used for the major release number which is used to identify a major increase in the product functionality.

The second digit, Y, stands for feature release number. The feature release number is iterated to identify when a set of product features have been added or significantly modified from their originally documented behavior.

The third digit, Z, is called the defect repair number and is incremented when a set of defects is repaired.

**8. Differentiate between organizational maturity and process capability. (3)**

**Answer: (Page 170)**

Organizational maturity is the focus of the staged representation, whereas process area capability is the focus of the continuous representation.

Organizational maturity and process area capability are similar concepts. The difference between them is that organizational maturity pertains to a set of process areas across an organization, while process area capability deals with a set of processes relating to a single process area or specific practice.

**10. In a human resource application, information of an employee is added by entering some general information. In addition to general information, the employee is salaried or hourly employee. The user has determined that an employee must be either salaried or hourly. Either type have information about dependencies. Identify the RET in above situation. (5)**

**Answer: (Page 46)**

For this example, there are three subgroups or RETs as shown below:

- Salaried employee (mandatory); includes general information
- Hourly employee (mandatory); includes general information
- Dependent (optional)

**11. A chat messenger is released and its version is 1.0.0. It only possesses chat functionality now. After 1 year there are different major features added like audio/video calls, files sharing and data sharing. Now what version number this chat messenger possesses? (5)**

**Answer: (Page 122)**

After 1 year version number will 2.0.0

Conventionally, a release number starts with a major number of one, followed by zero for its feature and maintenance numbers. This results in a release number 1.0.0. The first digit, X, is used for the major release number which is used to identify a major increase in the product functionality. The major release number is usually incremented to indicate a significant change in the product functionality or a new product base-line.

# CS605 - Final Term Papers Fall 2012

**Q. Two parameter of legacy system? (2marks)**

**Answer: - (Page 135)**

A legacy system can be accessed from two different perspectives – business value and quality.

**Q. Forward and reverse engineering?(2marks)**

**Answer: - (Page 139)**

Reverse engineering for software is a process for analyzing a program in an effort to create a representation of the program at a higher level of abstraction than the source code

Forward engineering requires application of SE principles, methods, and concepts to re-create an existing application.

**Q. Two characteristics of risk? (2marks)**

**Answer: - Rep**

**Q. Do u think that a long parameter list of functn /method can b bad smell? (3 Marks)**

**Answer: - (Page 143)**

**Long Method**

– Long methods are more difficult to understand; performance concerns with respect to lots of short methods are largely obsolete.

**Long Parameter List**

– hard to understand, can become inconsistent

**Q. Format the compound No. (3 Marks)**

**Answer: - Rep**

**Q. Occurrence of a software does not necessary result in a hazard or mishap do u agree or not (3 marks)**

**Answer: - (Page 117)**

Yes, agree.

Reliability and safety are closely related. Software reliability uses statistical techniques to determine the likelihood that a software failure will occur. Occurrence of a software failure does not necessarily result in a hazard or mishap. On the other hand, software safety examines the ways in which failures result in conditions that can lead to a mishap.

دنیا کی سب سے بڑی فتح نفس پر قابو رکھنا ہے

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# CS605 - Final Term Papers Fall 2012

## Short Questions - 2 Marks

1. "Message Chain" can be a bad smell. Explain it.

Answer: - Rep

2. A student claims that requirement errors are most common type of software errors and are most costly to fix. Do you agree?

Answer: - Rep

3. Is it true Poka-Yoke technique deals with project planning?

Answer: - (Page 118)

Poka-yoke is a Quality Assurance and Documentation technique. Poka-yoke devices are mechanisms that lead to prevention of potential quality problem before it occurs or the rapid detection of quality problems if they are introduced.

4. Write down 2 quality factors related with revision phase of software.

Answer: - Rep

## Short Questions - 3 Marks

1. In reverse engineering we move from lower abstraction level to higher level. Yes or no

Answer: - Rep

2. What are the appropriate situations to scrap a legacy system? (3)

Answer: - (Page 135)

This is the case when system is not making an effective contribution to business processes and business processes have changed significantly and the organization is no longer completely dependent upon the system.

3. What is effort validation?

Answer:- (Page 93)

Every project has a defined number of staff members. As time allocation occurs, the project manager must ensure that no more than the allocated number of people has been scheduled at any given time.

4. Write down the guidelines to make a review meeting successful.

Answer: - Rep

جھوٹ انسان اور ایمان دونوں کا دشمن ہے

## Long Questions – 5 Marks

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1. As compared to other models, waterfall mode is more manageable for managers. Explain with reasons.

**Answer: - Rep**

2. Do you think it is difficult to implement CMM level in small software companies?

**Answer: -**

Small software organizations, and small team projects (such are all students projects at universities) may find it difficult to achieve higher levels of maturity according to the CMM, since many of the key practices suggested by this model are inappropriate to small businesses and projects. Small project teams cannot cope with the overheads produced by the amount of documentation required by the CMM and they must use combined documents to reduce time. In small projects, teams usually have a flat structure, resulting in developers being assigned several roles due to scarce resources.

3. Many times we tag requirements with certain attributes e.g., Requirement ID, requirement Status, list any two advantages of such tags.

**Answer:- (Page 128)**

Attributes are used to establish a context and background for each requirement. They go beyond the description of intended functionality. They can be used to filter, sort, or query to view selected subset of the requirements.

4. Mention two problems that can be faced by software development organization if they are not having SCM.

**Answer: - Rep**

## CS605 - Final Term Papers Spring 2012

**Difference between measure and matrix**

**Answer:- (Page 65)**

Within the software engineering domain, a measure provides a quantitative value of some attribute of a process or a product.

Software metric relates individual software measures to provide a normalized view.

**In technical review meeting write the role of the producer and reviewers**

**Answer: - Rep**

**CCB stands for?**

**Answer: - Rep**

**Keeping in mind CMM maturity level find where the ad-hoc level falls**

**Answer: - Rep**

عقل مند کہتا ہے میں کچھ نہیں جانتا جبکہ بے وقوف کہتا ہے کہ میں سب کچھ جانتا ہوں

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**Comments can be bad smell? write a reason**

**Answer: - Rep**

**9 Write four reasons to migrate the legacy system**

**Answer:- (Page 135)**

1. Scrap the system completely: This is the case when system is not making an effective contribution to business processes and business processes have changed significantly and the organization is no longer completely dependent upon the system.
2. Continue maintaining the system: This option is used when system is still required, it is stable, and requirements are not changing frequently
3. Transform the system in some way to improve its maintainability: this option is exercised when system quality has been degraded and regular changes to the system are required.
4. Replace the system with a new system: this path is taken when old system cannot continue in operation and off-the shelf alternative is available or system can be developed at a reasonable cost.

## CS605 - Final Term Papers Spring 2012

**4 questions of 2 marks each.**

**1 which is individual level in CMM?**

**Answer:- (Page 12)**

level 1

**2 what is SCI in respect to SCM?**

**Answer:- (Page 120)**

A Software Configuration Item (SCI) is the information that is created as part of the software engineering process.

**3 "baseline requirements affects to trace" is it true or false? true.**

**4 message chain is why add towards bad smell?**

**Answer: - Rep**

خود کو تمہیں سے بڑھ کر کوئی اچھا مشورہ نہیں دے سکتا

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### 3 marks questions were

1 what is release version number format?

**Answer: - Rep**

2 what is software reliability?

**Answer:- (Page 115)**

Software reliability is another very important quality factor and is defined as probability of failure free operation of a computer program in a specified environment for a specified time. For example, a program X can be estimated to have a reliability of 0.96 over 8 elapsed hours.

3 RMMM what defines?

**Answer:- (Page 88)**

RMMM stands for risk mitigation, monitoring, and management plan.

### 5 marks questions

2: a chat messenger is released and its version is 1.0.0 .it only posses chat functionality now. after 1 year there are different major features are added lilke audio/video calls, files sharing and data sharing. now what version number this chat messenger posses?

**Answer: - Rep**

4: the SQA techniques are well or not for the development of software systems? give your comments to prove either right or wrong?

**Answer:- (Page 108)**

An SQA plan is developed for the project during project planning and is reviewed by all stake holders. The plan includes the identification of:

- Evaluations to be performed
- Audits and reviewed to be performed
- Standards that are applicable to the project
- Procedures for error reporting and tracking
- Documents to be produced by the SQA group
- Amount of feedback provided to the software project team

The group participates in the development of the project's software process description. The software team selects the process and SQA group reviews the process description for compliance with the organizational policies, internal software standards, externally imposed standards, and other parts of the software project plan.

جو شخص ناکامیوں سے ڈر کر بھاگتا ہے کامیابی اُس سے ڈر کر بھاگتی ہے

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# CS605 - Final Term Papers Spring 2012

**How deadline of a product influence quality and resources of product? 3 marks**

**Answer:- (Page 27)**

Delivery deadline directly influences the resources and quality. With a realistic deadline, chances of delivering the product with high quality and reasonable resources increase tremendously as compared to an unrealistic deadline. So a project manager has to first determine a realistic and reasonable deadline and then monitor the project progress and ensure timely delivery.

**Software configuration management is a design activity Give your answer yes or no. support your answer with reason. 3 marks**

**What is the potential benefit of modifying the source code and data ? 3 marks**

**Answer:- (Page 139)**

We modify source code and data in order to make it amenable to future changes. This includes code as well as data restructuring. Code restructuring requires redesign with same function with higher quality than original program and data restructuring involves restructuring the database or the database schema. It may also involve code restructuring.

**MTTF = 48, MTTR = 4, calculate availability? 5 marks**

**Answer:-**

$$\begin{aligned} \text{MTBF} &= \text{MTTF} + \text{MTTR} \\ &= 48 + 4 = 52 \end{aligned}$$

$$\begin{aligned} \text{Availability} &= (\text{MTTF}/\text{MTBF}) \times 100 \\ &= (48/52) \times 100 = 92.30 \end{aligned}$$

**9. List the Steps of software re engineering? 5 marks**

**Answer:- (Page 138)**

- Inventory analysis
- Document restructuring
- Reverse engineering
- Program Restructuring
- Data restructuring
- Forward Engineering

**11. Interdependency of each compartmentalized step is necessary? What is the effect of interdependency on the overall project? 5 marks**

**Answer:- (Page 92)**

The interdependency of each compartmentalized activity or task must be determined. Some tasks must occur in sequence while others can occur in parallel. Some activities cannot commence until the work product produced by another is available.

## CS605 - Final Term Papers Spring 2012

**1. Do u think that it is difficult to implement CMM levels in small software companies? (5)**

**Answer: - Rep**

**2. Many time we tag requirements with certain attributes e.g, Requirement ID, requirement Status, list any two advantages of such tags (5).**

**Answer: - Rep**

**3. The relationship between number of people and time to develop an application is not linear, what do you understand by this statement? (5)**

**Answer:- (Page 92)**

The relationship between the number of people and time to develop an application is not linear. It is not as simple as a 120 man-day project can be developed by 1 person working for 120 days or 120 people working for 1 day. The communication and coordination overhead plays a very significant role.

**4. Comment on the following statement regarding "review meeting" No review is better than an uncontrolled review? (5)**

**Answer:- (Page 113)**

An uncontrolled review can be worse than no review. The basis principle is that the review should focus on the product and not the producer so that it does not become personal. Remember to be sensitive to personal egos. Errors should be pointed out gently and the tone should be loose and constructive.

جو لوگوں کے سامنے فخر کرتا ہے وہ لوگوں کی نظروں سے گر جاتا ہے

**5. Do you think that a long parameter list of a function/method can be a 'bad smell', give reasons to support your answer? (3)**

**Answer:- (Page 143)**

Long Parameter List hard to understand, can become inconsistent

**6. Write down the format of the compound number normally used for release versioning (3)**

**Answer: - Rep**

**7. Why is the system being developed in W5HH principle, Explain. (3)**

**Answer: -**

The answer to this question all parties to the validity of the business reasons for the software to evaluate. Set in a different way; time not only business people and spending money?

**8. How defect removal efficiency can be increased with the help of reviews (3)**

**Answer: - Rep**

**10. CCB stands for (2)**

**Answer: - Rep**

## **CS605 - Final Term Papers Fall 2011**

**Two Factor of Revision ( 2 )**

**Answer: - Rep**

**How can calculate MTBF ( 2 )**

**Answer: - Rep**

**what is software refactoring ( 2 )**

**Answer:- (Page 143)**

Software refactoring is the process of changing a software system such that the external behavior of the system does not change while the internal structure of the system is improved. This is sometimes called “Improving the design after it has been written”.

**List the factor involved in calculating the cost of reengineering ( 3 marks )**

**Answer:- (Page 140)**

Cost of reengineering would then be given by the formula:

$$C_{\text{reengineering}} = [P6 - (P4 + P5) \times (L - P8) - (P7 \times P9)]$$

**The following code segment sorts an array of integers using “selection sort” algorithm. ( 3 marks )**

```
for (i=0; i < N-1; i++) {  
    min = i;  
    for (j = i; j < N; j++)  
        if (a[j] < a[min]) min = j;  
    temp = a[i];  
    a[i] = a[min];  
    a[min] = temp;  
}
```

**Answer:- (Page 144)**

We break it into smaller fragments by making smaller functions out of different steps in the algorithm as follows:

```
int minimum (int a[ ], int from, int to)
```

```
{  
    int min = from;  
    for (int i = from; i <= to; i++)  
        if (a[i] < a[min]) min = i;  
    return min;  
}
```

```
void swap (int &x, int &y)
```

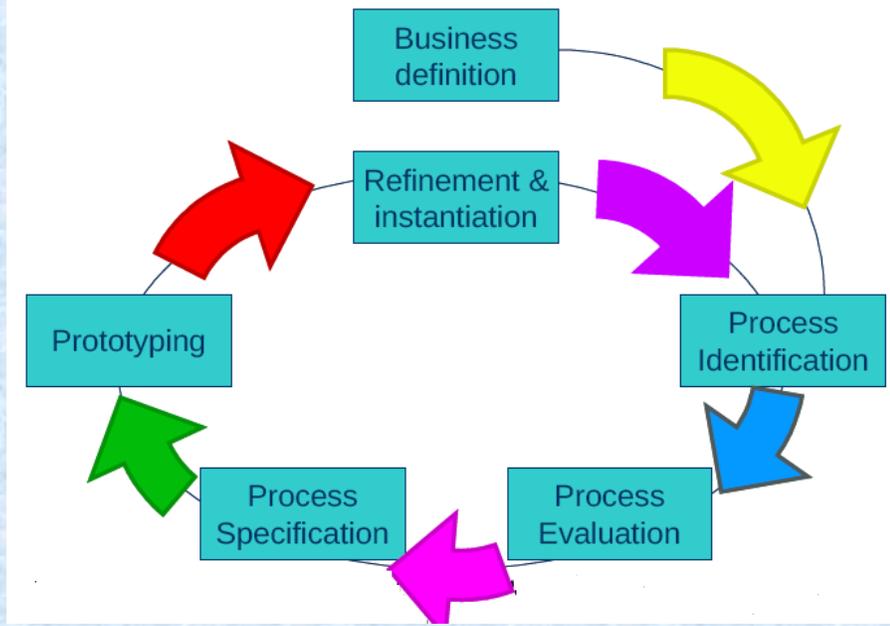
```
{  
    int temp = x;  
    x = y;  
    y = temp;  
}
```

The sort function now becomes simpler as shown below.

```
for (i=0; i < N-1; i++) {  
    min = minimum (a, i, N-1);  
    swap(a[i], a[min]);  
}
```

what are the step of BPR ( 5 marks )

Answer:- (Page 141)



خاموشی غصے کا بہترین علاج ہے

انسان دکھ نہیں دیتے بلکہ انسانوں سے وابستہ امیدیں دکھ دیتی ہیں

عقل مند اپنے عیب خود دیکھتا ہے اور بیوقوفوں کے عیب دنیا دیکھتی ہے

تم اچھا کرو زمانہ تم کو برا سمجھے یہ اس سے بہتر ہے کہ تم برا کرو اور زمانہ تم کو اچھا سمجھے

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