Programming Puzzles

Some companies certainly ask for these puzzles. Specially Microsoft. Here are my favorite puzzles.

1. Write a "Hello World" program in 'C' without using a semicolon.
2. Write a C++ program without using any loop (if, for, while etc) to print numbers from 1 to 100 and 100 to 1;
3. C/C++ : Exchange two numbers without using a temporary variable.
4. C/C++ : Find if the given number is a power of 2.
5. C/C++ : Multiply x by 7 without using multiplication (*) operator.
6. C/C++ : Write a function in different ways that will return f(7) = 4 and f(4) = 7
7. Remove duplicates in array
8. Finding if there is any loop inside linked list.
9. Remove duplicates in an no key access database without using an array
10. Convert (integer) number in binary without loops.
11. Write a program whose printed output is an exact copy of the source. Needless to say, merely echoing the actual source file is not allowed.
12. From a 'pool' of numbers (four '1's, four '2's .... four '6's), each player selects a number and adds it to the total. Once a number is used, it must be removed from the pool. The winner is the person whose number makes the total equal 31 exactly.
13. Given an array (group) of numbers write all the possible sub groups of this group.

C/C++ Questions

These are sample questions. Personally I hate asking questions related to code. If you want some old question papers of some Indian IT industries , You many find it <u>here</u>

1. What is the output of **printf("%d")**
2. What will happen if I say **delete this**
3. Difference between "C structure" and "C++ structure".
4. Diffrence between a "assignment operator" and a "copy constructor"
5. What is the difference between "overloading" and "overridding"?
6. Explain the need for "Virtual Destructor".
7. Can we have "Virtual Constructors"?
8. What are the different types of polymorphism?
9. What are Virtual Functions? How to implement virtual functions in "C"
10. What are the different types of Storage classes?
11. What is Namespace?
12. What are the types of STL containers?.
13. Difference between "vector" and "array"?
14. How to write a program such that it will delete itself after execution?
15. Can we generate a C++ source code from the binary file?
16. What are inline functions?
17. Talk some timing about profiling?
18. How many lines of code you have written for a single program?
19. What is "strstream" ?
20. How to write Multithreaded applications using C++?
21. Explain "passing by value", "passing by pointer" and "passing by reference"
22. Write any small program that will compile in "C" but not in "C++"
23. Have you heard of "mutable" keyword?
24. What is a "RTTI"?
25. Is there something that I can do in C and not in C++?
26. Why preincrement operator is faster than postincrement?
27. What is the difference between "calloc" and "malloc"?

28. What will happen if I allocate memory using "new" and free it using "free" or allocate sing "calloc" and free it using "delete"?
29. What is Memory Alignment?
30. Explain working of printf.
31. Difference between "printf" and "sprintf".
32. What is "map" in STL?
33. When shall I use Multiple Inheritance?
34. What are the techniques you use for debugging?
35. How to reduce a final size of executable?
36. Give 2 examples of a code optimization.

Java Interview Questions

1. Meaning - Abstract classes, abstract methods
2. Difference - Java,C++
3. Difference between == and equals method
4. Explain Java security model
5. Explain working of Java Virtual Machine (JVM)
6. Difference : Java Beans, Servlets
7. Difference : AWT, Swing
8. Disadvantages of Java
9. What is BYTE Code ?
10. What gives java it's "write once and run anywhere" nature?
11. Does Java have "goto"?
12. What is the meaning of "final" keyword?
13. Can I create final executable from Java?
14. Explain Garbage collection mechanism in Java
15. Why Java is not 100% pure object oriented language?
16. What are interfaces? or How to support multiple inhertance in Java?
17. How to use C++ code in Java Program?
18. Difference between "APPLET" and "APPLICATION"

Visual Basic Interview Questions

1. 3 main differences between flexgrid control and dbgrid control
2. ActiveX and Types of ActiveX Components in VB
3. Advantage of ActiveX Dll over Active Exe
4. Advantages of disconnected recordsets
5. Benefit of wrapping database calls into MTS transactions
6. Benefits of using MTS
7. Can database schema be changed with DAO, RDO or ADO?
8. Can you create a tabletype of recordset in Jet - connected ODBC database engine?
9. Constructors and distructors
10. Controls which do not have events
11. Default property of datacontrol

12. Define the scope of Public, Private, Friend procedures?
13. Describe Database Connection pooling relative to MTS
14. Describe: In of Process vs. Out of Process component. Which is faster?
15. Difference between a function and a subroutine, Dynaset and Snapshot,early and late binding, image and picture controls,Linked Object and Embedded Object,listbox and combo box,Listindex and Tab index,modal and moduless window, Object and Class,Query unload and unload in form, Declaration and Instantiation an object?
16. Draw and explain Sequence Modal of DAO
17. How can objects on different threads communicate with one another?
18. How can you force new objects to be created on new threads?
19. How does a DCOM component know where to instantiate itself?
20. How to register a component?
21. How to set a shortcut key for label?
22. Kind of components can be used as DCOM servers
23. Name of the control used to call a windows application
24. Name the four different cursor and locking types in ADO and describe them briefly
25. Need of zorder method, no of controls in form, Property used to add a menus at runtime, Property used to count number of items in a combobox,resize a label control according to your caption.
26. Return value of callback function, The need of tabindex property
27. Thread pool and management of threads within a thread pool
28. To set the command button for ESC, Which property needs to be changed?
29. Type Library and what is it's purpose?
30. Types of system controls, container objects, combo box
31. Under the ADO Command Object, what collection is responsible for input to stored procedures?
32. VB and Object Oriented Programming
33. What are the ADO objects? Explain them.
34. What are the different compatibility types when we create a COM component?
35. What do ByVal and ByRef mean and which is the default?
36. What does Option Explicit refer to?
37. What does the Implements statement do?
38. What is OLE and DDE? Explain.
39. What is the difference between Msgbox Statement and MsgboxQ function?
40. What keyword is associated with raising system level events in VB?
41. What methods are called from the ObjectContext object to inform MTS that the transaction was successful or unsuccessful?
42. What types of data access have you used.
43. What was introduced to Visual Basic to allow the use of Callback Functions?
44. Which controls can not be placed in MDI?
45. Which controls have refresh method, clear method
46. Which Property is used to compress a image in image control?
47. Which property of menu cannot be set at run time?

48. Which property of textbox cannot be changed at runtime and What's the maximum size of a textbox?
49. Which tool is used to configure the port range and protocols for DCOM communications?

10 General Questions:

- Tell me about yourself.
  * Keep your answer to one or two minutes; don't ramble.
  * Use a ''positioning statement'' as a base to start. Your positioning statement is the boiled-down story of your resume -- general goals, skills and background.
- What do you know about our company?
  * Know products, size, income, reputation, image, goals, problems, management talent, management style, people, skills, history and philosophy.
  * Project an informed interest. Ask several open-ended questions about the company's course and the department's goals so the interviewer can tell you about the company. Let her define the business in her terms.
- Why do you want to work for us?
  * Don't talk about what you want; first talk about their needs.
  * You wish to be part of a company project.
  * You would like to solve a company problem.
  * You can make a definite contribution to specific company goals: identify its management talent, increase sales in the Northeast region, and so on.
- What would you do for us? What can you do for us that someone else can't?
  * Relate past successes in solving previous employer problems, which may be similar to those of the prospective employer.
- What about our position do you find the most attractive? Least attractive?
  * List three or more attractive factors and only one minor unattractive factor.

- Why should we hire you?
* Because of knowledge, experience, abilities and skills. Tell what these are.
- What do you look for in a job?
* An opportunity to use skills, perform and be recognized.
- Please give me your definition of a … (the job for which you are being interviewed).
* Keep it brief and action- and results-oriented
- How long would it take you to make a meaningful contribution to our firm?
* Very quickly after a little orientation and a brief period of adjustment on the learning curve.
- How long would you stay with us?
* As long as we both feel I'm contributing, achieving, growing and so on.

8 Experience and Management Questions:

- You may be overqualified or too experienced for the position we have to offer.
* Strong companies need strong people.

* Experienced executives are at a premium today.
* Emphasize your interest in a long-term association.
* The employer will get a faster return on investment because you have more experience than required.
* A growing, energetic company is rarely unable to use its people talents.
• What is your management style?
* If you've never thought about this, it's high time you did. Open door is best, but you get the job done on time or inform your management.
• Are you a good manager? Give an example. Why do you feel you have top managerial potential?
* Keep your answer achievement- and task-oriented and emphasize management skills -- planning, organizing, controlling, interpersonal and so on.
• What did you look for when you hired people?
* Skills, initiative, adaptability.
• Have you ever fired anyone? If so, what were the reasons and how did you handle it?
* You have had experience with this and it worked out well since it wasn't a good fit, or you've focused on having a great team that works well together so have never been presented with this problem.
• What do you see as the most difficult task in being a manager?
* Getting things planned and done on time within the budget.
• What do your subordinates think of you?
* Be honest and positive; they can check your responses easily.

   • • What is your biggest weakness as a manager?
     * Be honest and end on a positive note: "I have a problem reprimanding people so I always begin with something positive first."

Networking, Socket Programming, Inter-Process Communication

1. User(s) are complaining of delays when using the network. What would you do?
2. What are some of the problems associated with operating a switched LAN?
3. Name some of the ways of combining TCP/IP traffic and SNA traffic over the same link.
4. What sort of cabling is suitable for Fast Ethernet protocols?
5. What is a Class D IP address?
6. Why do I sometimes lose a server's address when using more than one server?
7. What is Firewall?
8. How do I monitor the activity of sockets?
9. How would I put my socket in non-blocking mode?
10. What are RAW sockets?
11. What is the role of TCP protocol and IP protocol.
12. What is UDP?
13. How can I make my server a daemon?
14. How should I choose a port number for my server?
15. Layers in TCP/IP
16. How can I be sure that a UDP message is received?
17. How to get IP header of a UDP message

18. Writing UDP/SOCK_DGRAM applications
19. How many bytes in an IPX network address?
20. What is the difference between MUTEX and Semaphore?
21. What is priority inversion?
22. Different Solutions to dining philosophers problem.
23. What is a message queue?
24. Questions on Shared Memory.
25. What is DHCP?
26. Working of ping, telnet, gopher.
27. Can I connect two computers to internet using same line ?

Object-Orientation Concepts, UML interview Questions

1. What is inheritance?
2. Difference between Composition and Aggregation.
3. Difference: Sequence Diagrams, Collaboration Diagrams.
4. Difference: 'uses', 'extends', 'includes'
5. What shall I go for Package Diagram?
6. What is Polymorphism?
7. Is class an Object? Is object a class?
8. Comment: C++ "includes" behavior and java "imports"
9. What do you mean by "Realization"?
10. What is a Presistent, Transient Object?
11. What is the use of Operator Overloading?
12. Does UML guarantee project success?
13. Difference: Activity Diagram and Sequence Diagram.
14. What is association?
15. How to resolve many to many relationship?
16. How do you represent static members and abstract classes in Class Diagram?
17. Can we use UML for user interface (UI) design?
18. Every object has : state, behavior and identity - explain
19. How to reverse engineer C++ code in UML?
20. What are the tools you used for OOAD?
21. Difference: Object Oriented Analysis (OOA) and Object Oriented Design (OOD)?
22. What are the four phases of the Unified Process ?
23. How do you convert uses cases into test cases?
24. Explain Class Diagram in Detail.
25. What are the Design Patterns you know.
26. When do you prefer to use composition than aggregation?
27. UML: IS it a process, method or notation?
28. Does a concept HAVE to become a class in Design?
29. What are the good practices to use while designing for reuse?
30. Can you think of some nice examples where *multiple* actors are associated with a use case ?
31. How to use CRC Cards for Class Design?

32. What is the difference between static and dynamic Classificaition.Give some examples.
33. Explian following terms: Constraint Rules, Design by contract.
34. What is Object Constraint Language (OCL)?
35. Difference Between Attribute and Association.
36. What are associative classes?

1 Industry Trends Question:

• What important trends do you see in our industry?
* Keep your answer to two or three trends.

4 Questions If You Are Leaving a Job:

• Why are you leaving your present job?
* Refine your answer based on your comfort level and honesty.
* Give a "group" answer if possible; for instance, "Our department was consolidated or eliminated."
• How do you feel about leaving all of your benefits?
* Concerned but not panicked.
• Describe what you feel to be an ideal working environment.
* Where people are treated as fairly as possible.
• How would you evaluate your present firm?
* An excellent company that afforded me many fine experiences.

12 Questions Quantifying Your Experience and Accomplishments:

• Have you helped increase sales? Profits? How?
* Describe in some detail.
• Have you helped reduce costs? How?
* Same as above.
• How much money did you ever account for?
* Be specific.
• How many people did you supervise on your last job?
* Be specific.
• Do you like working with figures more than words?
* Be honest but positive.
• In your present or last job, what features did you like the most? Least?
* Same as above
• In your present or last job, what are or were your five most significant accomplishments?
* You could refer to the key accomplishments already identified on resume.
• Why haven't you found a new position before now?
* Finding a job is easy but finding the right job is more difficult. You are being "selective."

- Had you thought of leaving your present position before? If yes, what do you think held you there?
* Challenge, but it's gone now.
- What do you think of your boss?
* Be as positive as you can.
- Describe a situation in which your work was criticized?
* Pick an example that emphasizes how you grew from the experience.
- What other types of jobs or companies are you considering?
* Keep your answer related to this company's field.

8 Questions on Your Work Habits and Style:

- If I spoke with your previous boss, what would he say are your greatest strengths and weaknesses?
* Emphasize skills -- don't be overly negative about your weaknesses; it's always safe to identify a lack of a skill or experience as a shortcoming rather than a personal characteristic.

- Can you work under pressures and deadlines?
* Yes. Quite simply, it is a way of life in business.
- How have you changed the nature of your job?
* Improved it, of course.
- Do you prefer staff or line work? Why?
* It depends on the job and its challenges.
- In your present position, what problems have you identified that had previously been overlooked?
* Keep it brief and don't brag -- that is, stick to the facts.
- Don't you feel you might be better off in a different size company? Different type company?
* Depends on the job -- elaborate slightly.
- How do you resolve conflict on a project team?
* First discuss issues privately.
- What was the most difficult decision you ever had to make?
* Attempt to relate your response to the prospective employment situation.

3 Salary Questions:

- How much are you looking for?
* Answer with a question: ''What is the salary range for similar jobs in your company?''
* If they don't answer, then give a range of what you understand you are worth in the marketplace.

- How much do you expect, if we offer this position to you?
* Be careful; the market value of the job may be the key answer -- ''My understanding is that a job like the one you're describing may be in the range of $_____.''
- What kind of salary are you worth?
* Have a specific figure in mind, but don't necessarily volunteer it.

4 Personality Questions:

- What was the last book you read? Movie you saw? Sporting event you attended?
* Talk about books, sports or films to represent balance in you life.
- How would you describe your own personality?
* Balanced.
- What are your strong points?
* Present at least three and relate them to the interviewing company and job opening.
- What are your weak points?
* Don't say you have none.
* Try not to cite personal characteristics as weaknesses, but be ready to have one if interviewer presses.
* Turn a negative into a positive answer: "I am sometimes intent on completing an assignment and get too deeply involved when we are late."

Operating Systems

1. What is MUTEX ?
2. What isthe difference between a 'thread' and a 'process'?
3. What is INODE?
4. Explain the working of Virtual Memory.
5. How does Windows NT supports Multitasking?
6. Explain the Unix Kernel.
7. What is Concurrency? Expain with example Deadlock and Starvation.
8. What are your solution strategies for "Dining Philosophers Problem" ?
9. Explain Memory Partitioning, Paging, Segmentation.
10. Explain Scheduling.
11. Operating System Security.
12. What is Semaphore?
13. Explain the following file systems : NTFS, Macintosh(HPFS), FAT .
14. What are the different process states?
15. What is Marshalling?
16. Define and explain COM?
17. What is Marshalling?
18. Difference - Loading and Linking ?

The World of WWW

1. What is HTTP? Explain its working?
2. What is DNS?
3. Why do I need a domain name like 'OneSmartClick.Com'?
4. What happens when I type in some url and press enter?
5. How does CGI work? Can I use 'C' language to write a CGI?
6. Working of Proxy Server, Cookies, types of cookies?
7. What is Firewall?
8. How to redirect to another page?

9. Some questions on web servers.
10. What is DOM?
11. Connection Pooling in IIS 3.0 and 4.0
12. What is Code Base, Style Sheets?
13. Need for CSS
14. DHTML: Difference between FontSize and Font Size?
15. Layers in TCP/IP
16. Some sites work with "http://sitename.com" but for some sites we need to specify "www" - like "http://www.sitename.com". Why?
17. Explain "URL Encoding",HTML "entity", GET method, POST method
18. If we force XML for web design, the browzer size will reduce. How?
19. How does DTD work?
20. Difference between ASP and DHTML?
21. How to create virtual directory in IIS?
22. Can I host muliple sites on same machine?
23. Administration of IIS.
24. Some questions on ODBC and internet.
25. XML and propritory databbases.
26. Working of ping, telnet, gopher.

Database Questions

1. What are the different types of joins?
2. Explain normalization with examples.
3. What cursor type do you use to retrieve multiple recordsets?
4. Diffrence between a "where" clause and a "having" clause
5. What is the difference between "procedure" and "function"?
6. How will you copy the structure of a table without copying the data?
7. How to find out the database name from SQL*PLUS command prompt?
8. Tadeoffs with having indexes
9. Talk about "Exception Handling" in PL/SQL?
10. What is the diference between "NULL in C" and "NULL in Oracle?"
11. What is Pro*C? What is OCI?
12. Give some examples of Analytical functions.
13. What is the difference between "translate" and "replace"?
14. What is DYNAMIC SQL method 4?
15. How to remove duplicate records from a table?
16. What is the use of ANALYZing the tables?
17. How to run SQL script from a Unix Shell?
18. What is a "transaction"? Why are they necessary?
19. Explain Normalizationa dn Denormalization with examples.
20. When do you get contraint violtaion? What are the types of constraints?
21. How to convert RAW datatype into TEXT?
22. Difference - Primary Key and Aggregate Key
23. How functional dependency is related to database table design?
24. What is a "trigger"?
25. Why can a "group by" or "order by" clause be expensive to process?

26. What are "HINTS"? What is "index covering" of a query?
27. What is a VIEW? How to get script for a view?
28. What are the Large object types suported by Oracle?
29. What is SQL*Loader?
30. Difference between "VARCHAR" and "VARCHAR2" datatypes.
31. What is the difference among "dropping a table", "truncating a table" and "deleting all records" from a table.
32. Difference between "ORACLE" and "MICROSOFT ACCESS" databases.
33. How to create a database link ?

Requirements Management

1. What is your project about? What stage or phase is it currently in? What is your current role in your project?
2. Explain how you manage requirements in your project?
3. Where and how do you document your requirements?
4. What and where are the policy statements for requirement management?
5. How do you ensure that you base your software plans, work items and products on the requirement?
6. If during some stage down the life cycle, the initial requirements change, what will you do? How will you handle any changes in the requirements?
7. Who reviews the requirements and the changes to the requirements?
8. Explain the contract review process followed in your project?
9. When requirements change, how do you handle the changes it may lead to project progress and schedule?
10. How do you handle any risk that might arise due to changes in requirements?
11. How do you ensure that you are consistently meeting the requirements during various stages in the life cycle of the software product?
12. How do internal quality audits cover requirements management activities in the project?
13. Who is responsible for managing the requirements in your project?
14. What will you do if you find that you cannot meet the requirements?

While doing HLD/LLD/Coding/Testing, how do you know that a specific HLD/LLD component, program code unit, or test case relates to a particular requirement? Software Project Planning

1. What is the project management structure in your project? Is a PL assigned to the project?
2. How do you know that a particular individual is the project leader (or) how do you know that you are the Project Leader?
3. What and where are the policy statements for software project planning?
4. Explain the various activities you do (as a PL) when the project is started up.
5. How do you know what you need to deliver or do in your project?
6. How do you create the Software Project Management Plan (SPMP)?
7. What training have you undergone in project planning?

8. How do you ensure that your project plan is available for others to see? Where will you find the plans of other projects executed (in the past or currently) in the center?
9. How did you choose the appropriate lifecycle for your project?
10. What are the documents that you will refer to create the plan?
11. How do you estimate the effort for your project? Where is the estimation procedure documented?
12. What procedures do you follow to arrive at the project schedule?
13. Where and how are the risks associated with your project identified and documented?
14. When you come in to the office, how do you know what you have to do during the day?
15. How do you report the status of your project?
16. How are the team members kept informed about the current status of the project?
17. How do the audits cover planning activities?
18. How does the senior management review your project's progress?
19. How do you track the technical activities in your project? How is the status of the project communicated to the team?
20. How do you track the size or changes to size of the work products in your project?
21. When do revise your project plan? When do you know you have to revise your project plan? Where is the plan revision frequency documented?
22. How do you ensure that you and all the other team members in your project have the required technical skills to execute the project?
23. How do you assign tasks to your team members? ?
24. What is the document that should be consulted to know about your project, the activities you do, your schedules and milestones?

Software Quality Assurance

1. What and where are the policy statements that dictate quality assurance in your project?
2. What are the functions of the Quality Assurance Group (QAG)?
3. How are the quality assurance activities planned ?
4. What is a non-conformance report (NCR)?
5. When a non-conformance is noted during these "reviews", what happens next?
6. What is is External Quality Assurance (EQA) and Final Inspection (FI)?
7. Is the quality assurance group (for the QAG) audited? Who does these audits?
8. How frequently is your project audited? How do you know the result of these audits?
9. What is an internal quality audit? What happens during this audit?