

Answers to 115359: Demonstrate an understanding of the handling of error in a computer programming environment

1. Explain different errors found in the computer programming environment.

Syntax Errors

Any violation of rules and poor understanding of the programming language results in syntax errors. The compiler can detect such errors. If syntax errors are present in the program then the compilation of the program fails and is terminated after showing the list of errors and the line number where the errors have occurred. In some cases the line number may not exactly indicate the correct place of the error. In some other cases, a single syntax error can result in a long list of errors. Correction of one or two errors in the program may remove the entire list of errors.

Run-time Errors

execution of the program. Some examples are, dividing by zero error, insufficient memory for dynamic memory allocation, referencing an out-of-range array element. These are not detected by compiler while compilation process. A program with these kinds of errors will run but produce erroneous results or may cause termination of program. Detection and removal of a run-time error is a difficult task.

Logical Errors

As the name itself implies, these errors are related to the logic of the program. Logical errors are also not detected by compiler and cause incorrect results. These errors occur due to incorrect translation of algorithm into the program, poor understanding of the problem and a lack of clarity of hierarchy of operators. Consider following C statement:

```
if(a==b)
    printf("Equaln");
```

When a and b are float types values, they rarely become equal due to truncation errors. The printf call may not be executed at all. A statement like while(a!=b) might create an infinite loop.

Latent Errors

Latent Errors are the 'hidden' errors that occur only when a particular set of data is used. Consider below example:

```
result = (a+b)/(c-d);
```

An error occurs only when c and d are equal because that will make remainder zero (divide by zero error). Such errors can be detected only by using all possible combinations of data.

2. Demonstrate how calculation errors are induced in the computer

Calculation errors are usually the result of incorrect data entry or error in the program. Very rarely does some physical fault like a component failure or a voltage surge cause a bad value. Those usually cause a system crash.

However some programs only calculate an “approximate” value because the actual value cannot be represented as a finite string of symbols. For example, the number $1/3$ cannot be written exactly either as a decimal or as a binary number. It can only be approximated. Also trig functions, exponentials, and logarithms can only be approximated as is true for the solution to differential equations. So you use floating point arithmetic with a fixed and limited number of digits. When you do a long calculation, adding and subtracting, multiplying and dividing, the error grows. In particular, when you subtract two very large numbers that are almost equal, the percentage error can grow enormously. All this is covered in the subject “numerical analysis” so that you can find algorithms that do produce a result accurate enough for your purpose.

There are systems, though, that are called “chaotic”. In these, there is no possible way to compute an accurate value in a limited time span.

3. Demonstrate how mistakes and computer errors can be minimised

Errors happen. It’s inevitable that any system will fail at times. Often failures are attributed to human error. Most, though are really due to design errors. As designers what can we do to minimize errors and their effects on our sites and in our applications?

Fortunately we can communicate through a variety design strategies in a way that reduce both the frequency of errors on the sites we build and the magnitude of those errors that inevitably occur.

There are a number of strategies and a lot to cover. We’ll begin today with a look at errors in general, the different types and causes of errors, and offer a quick mention of the strategies at our disposal. Then we’ll look in more detail at the first of these strategies for countering errors, affordance.

The 2 Types of Errors

Errors are actions taken or not taken that lead to unintended results. There are two main types of errors that can occur, slips and mistakes, each with their own subtypes of errors.

Slips

Slips are errors of action or errors of execution. An example I’m sure you’re familiar with is when you find yourself driving to a common destination when you meant to drive somewhere else.

Another example is when you’re adding a series of numbers in a column and the phone rings and you temporarily lose your place and skip a number before continuing to add again.

Slips occur when the action taken was not the one intended and they're usually the result of the unconscious. They frequently result from a change in the usual routine or the interruption of an action you were taking.

There are two types of slips.

Action slips result from changes to repetitive tasks. The driving example above is an action slip (PDF), since the error comes from varying the routine.

We help prevent action slips by providing clear and distinctive feedback and through the use of confirmations, constraints, affordance, and mappings (all to be covered later in this post or parts ii or iii). Sticking to conventions can also help prevent action slips as they maintain the status quo.

Attention slips result from distractions and interruptions. The number adding example is an attention slip since the slip occurs due to an interruption of your current activity.

We help prevent attention slips through clear orientation and status cues. You might use highlighting to focus attention where it belongs or make use of alarms to attract attention in critical situations.

We can minimize slips in general by offering clear feedback on the actions people are taking. You want to make messages clear and mention the consequences of the error along with what corrective measures can be taken.

We can position controls in such a way that prevents accidental activation. We can also make use of the principles of affordance and constraints. We'll get to the former further down this post and the latter in a subsequent post.

Mistakes

Mistakes are errors of intention or errors of planning. Unlike slips, they're conscious errors that occur when an action is inappropriate.

Choosing to block search engines from crawling your site is a mistake. Forgetting to remove the temporary robots.txt file you set up to block search engines while your site was under development is a slip.

Mistakes can result from stress or decision making biases, for example when a person is biased to select only from one of several immediately visible options. Mistakes can also occur from not enough or poor information necessary to make a decision.

As with slips there is more than one type of mistake.

Perception mistakes result from incomplete or vague feedback. We can help prevent perception mistakes by improving situational awareness and providing clear and distinctive feedback. Tracking and displaying historical behaviours with the system can also help reduce perception mistakes as they help present a clear picture of what's going on.

Decision mistakes result from stress, overconfidence, and decision-making biases. You can reduce decision mistakes by reducing the surrounding noise and increasing the signal and providing checklists and decision trees. Training people in error recovery and troubleshooting can help reduce decision mistakes.

Knowledge mistakes result as you might guess from a lack of knowledge or poor communication. Using redundancy to communicate a singular message is one way to reduce knowledge errors. Sticking with conventions is another as are the use of memory and decision aides. In training you can offer case studies and simulations.

In general we minimize mistakes by increasing situational awareness and reducing noise. Place controls so they are visible within one eye span when possible and reduce cognitive overload both auditory and visual.

More choices usually leads to more mistakes from overload. Use the principle of progressive disclosure to provide just enough information and feedback to complete the desired task along with links to more information when requested. Multiple confirmations can be used to verify user intention when performing critical tasks.

I mentioned a few design principles above aimed at reducing and minimizing errors. Let's start talking about some strategies in greater detail. We'll look at the following design principles:

Affordance is the idea that the physical characteristics of a design influence its function.

Mapping is the relationship between design controls, their movements, and their effects on the element(s) they control.

Nudge is a method for predictably altering behavior without restricting options or significantly changing incentives.

Constraints are methods for limiting the actions that can be performed on a system.

Confirmations are techniques for preventing unintended actions by requiring verification of the actions before they are performed.

Forgiveness is the idea that designs should help people avoid errors where possible and minimize the consequences of errors when they do occur

Answers for 115365: Apply the principles of designing computer system inputs and output

1. Explain the principles of computer input and output design

Input Design

In an information system, input is the raw data that is processed to produce output. During the input design, the developers must consider the input devices such as PC, MICR, OMR, etc.

Therefore, the quality of system input determines the quality of system output. Well designed input forms and screens have following properties –

It should serve specific purpose effectively such as storing, recording, and retrieving the information.

It ensures proper completion with accuracy.

It should be easy to fill and straightforward.

It should focus on user's attention, consistency, and simplicity.

All these objectives are obtained using the knowledge of basic design principles regarding –

What are the inputs needed for the system?

How end users respond to different elements of forms and screens.

Objectives for Input Design

The objectives of input design are –

To design data entry and input procedures

To reduce input volume

To design source documents for data capture or devise other data capture methods

To design input data records, data entry screens, user interface screens, etc.

To use validation checks and develop effective input controls.

Data Input Methods

It is important to design appropriate data input methods to prevent errors while entering data. These methods depend on whether the data is entered by customers in forms manually and later entered by data entry operators, or data is directly entered by users on the PCs.

A system should prevent user from making mistakes by –

Clear form design by leaving enough space for writing legibly.

Clear instructions to fill form.

Clear form design.

Reducing key strokes.

Immediate error feedback.

Some of the popular data input methods are –

Batch input method (Offline data input method)

Online data input method

Computer readable forms

Interactive data input

Input Integrity Controls

Input integrity controls include a number of methods to eliminate common input errors by end-users. They also include checks on the value of individual fields; both for format and the completeness of all inputs.

Audit trails for data entry and other system operations are created using transaction logs which gives a record of all changes introduced in the database to provide security and means of recovery in case of any failure.

Output Design

The design of output is the most important task of any system. During output design, developers identify the type of outputs needed, and consider the necessary output controls and prototype report layouts.

Objectives of Output Design

The objectives of input design are –

To develop output design that serves the intended purpose and eliminates the production of unwanted output.

To develop the output design that meets the end users requirements.

To deliver the appropriate quantity of output.

To form the output in appropriate format and direct it to the right person.

To make the output available on time for making good decisions.

Let us now go through various types of outputs –

External Outputs

Manufacturers create and design external outputs for printers. External outputs enable the system to leave the trigger actions on the part of their recipients or confirm actions to their recipients.

Some of the external outputs are designed as turnaround outputs, which are implemented as a form and re-enter the system as an input.

Internal outputs

Internal outputs are present inside the system, and used by end-users and managers. They support the management in decision making and reporting.

There are three types of reports produced by management information –

Detailed Reports – They contain present information which has almost no filtering or restriction generated to assist management planning and control.

Summary Reports – They contain trends and potential problems which are categorized and summarized that are generated for managers who do not want details.

Exception Reports – They contain exceptions, filtered data to some condition or standard before presenting it to the manager, as information.

Output Integrity Controls

Output integrity controls include routing codes to identify the receiving system, and verification messages to confirm successful receipt of messages that are handled by network protocol.

Printed or screen-format reports should include a date/time for report printing and the data. Multipage reports contain report title or description, and pagination. Pre-printed forms usually include a version number and effective date.

Forms Design

Both forms and reports are the product of input and output design and are business document consisting of specified data. The main difference is that forms provide fields for data input but reports are purely used for reading. For example, order forms, employment and credit application, etc.

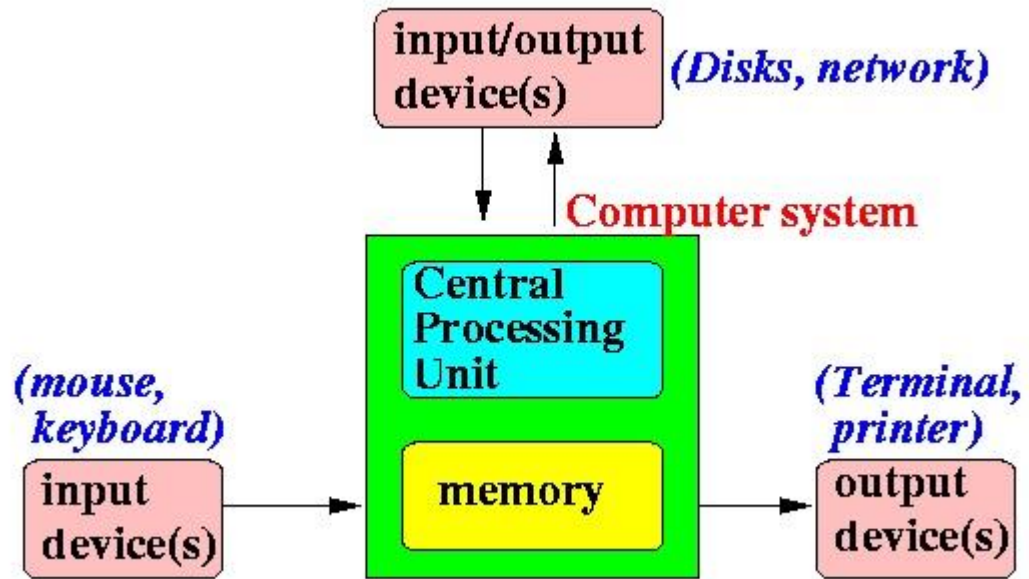
During form designing, the designers should know –

who will use them

where would they be delivered

the purpose of the form or report

During form design, automated design tools enhance the developer's ability to prototype forms and reports and present them to end users for evaluation.



2.

3. Create computer input and output functions.

The commonly used output devices have been listed below with a brief summary of what their function is and how they can be used. Monitor; The device which displays all the icons, text, images, etc. over a screen is called the Monitor; When we ask the computer to perform an action, the result of that action is displayed on the monitor

Answers for 115362: Manage software development source files using appropriate tools

1. Locate software development source files
C:\Users\Karvisha\OneDrive\Documents\GitHub\will-project

Answers for 115367: Demonstrate logical problem solving and error detection techniques

1. 1. Rational

One of the most common problem-solving approaches, the rational approach is a multi-step process that works well for a wide range of problems. Many other problem-solving techniques mirror or build off of its seven steps, so it may be helpful to begin with the rational approach before moving on to other techniques. Here are the seven steps of the rational approach:

Define the problem.

Identify possible causes.

Brainstorm options to solve the problem.

Select an option.

Create an implementation plan.

Execute the plan and monitor the results.

Evaluate the solution.

Read more: [Effective Problem Solving Steps in the Workplace](#)

2. Collaborative

This approach involves including multiple people in the problem-solving process.

Brainstorming should include a diverse group of stakeholders: people who are affected by the problem and/or may be affected by any changes made in an attempt to solve it. Seek continuous feedback from these stakeholders as you monitor the implementation of your solution to make sure it works well for everyone.

Read more: [8 Team-Building Activities for Improving Communication \(With Tips\)](#)

Creative

The creative approach mirrors the rational approach but places greater emphasis on the brainstorming phase. People using the creative approach utilize ideation techniques such as mind mapping, storyboards and analogies.

3. Historical

The historical approach is helpful when the problem you're facing has precedent within your field or industry. Researching how others have solved the problem can guide you as you develop your own solution.

4. The Simplex Process

The Simplex Process is an eight-step approach similar to the rational approach, but tailored for situations in which you are unsure of what the problem actually is. It begins with problem-finding and research, where users collect the information necessary for defining the problem. Users then move through idea-finding, evaluation and selection and planning.

They then encourage their peers and stakeholders to take active roles in implementing their plan, to soften any resistance to change. Finally, users execute their plan and monitor the results.

5. Issue-Based

A five-step approach often employed in consulting firms, the issue-based approach is useful when helping another person solve a problem they're facing. The user first creates a proposal that defines the problem and inventories the client's expectations. Next, the user diagrams the smaller issues that comprise the problem, then uses this diagram to help them design a solution. The user then conducts extensive research and synthesizes their data into a revised solution. Finally, they present their materials to the client and demonstrate why their solution is effective.

7. The 5 Whys

This approach can help you get to the root of a complex problem. Begin by asking why the problem occurred, and then ask the same question about your response. For example, if you answer that productivity has stagnated because morale is low, follow up by asking, "Why is morale low?" Ask "why" a total of five times. Doing so will help you find the problem's root cause.

8. Failure Mode and Effects Analysis (FMEA)

FMEA is unique among problem-solving approaches in that its goal is generally to preempt problems. A team of experts lists the functions of a product and then identifies every possible failure for each function. The team estimates the probability that each failure will occur, then rates its severity and detectability. The team uses these figures to calculate the risk priority number of each failure, revealing which problems should be addressed first.

9. Means-End Analysis

Means-end analysis is especially useful for big-picture problems because it shifts the focus from the problem itself—which might feel overwhelming—to the goal that you want to achieve. After envisioning your goal, you can work backward to identify the obstacles that lie in your path. Overcoming these smaller obstacles one at a time makes solving a large problem more manageable. Conversely, having an ultimate goal in mind can guide your decision-making as you address the smaller obstacles in your path.

10. SCAMPER

SCAMPER is an acronym for substitute, combine, adapt, modify, put to another use, eliminate and reverse—terms that represent options for improving a problematic product or service:

Substitute: Consider substituting elements of the product or service for something else.

Combine: Ask yourself whether you could improve it by combining it with another product or service.

Adapt: Consider whether the product or service would be more effective if you adapted it to another target audience.

Modify: Ask yourself which features it might be beneficial to modify.

Put to another use: Determine whether your product or service would be more effective if put to another use.

Eliminate: Identify any unnecessary features you might eliminate to improve the product or service.

Reverse: Imagine what would happen if you reconfigured the product or reversed the process of producing it.

Related: 10 Ideation Techniques for Problem-Solving

11. Organic

The organic approach provides an alternative perspective on the nature of problems. It assumes many problems are too intricate to fix by following a set of linear, generic steps. Instead, the organic approach calls for users to identify their visions and values, as well as identify actions they can take to realize them. In this way, the organic approach places importance on the problem-solving process rather than its results.

12. Hybrid

This approach involves combining two or more of the previous problem-solving approaches. Doing so prompts you to examine the problem from multiple angles, helping you to arrive at the most effective solution possible.

2. Describe the basic concepts of error detection.

Error Detection

Error detection is the method of identifying errors. To identify these errors, it uses some redundancy codes. Redundancy codes added in actual data, and it has transmitted by the sender. These codes are known as error detection codes.

Types of error detection techniques:

Parity Checking

Cyclic Redundancy Check (CRC)

Checksum

Parity Checking

Parity Checking is also known as the Vertical redundancy check (VRC). Parity checking is a very simple technique. There are two cases in the parity checking techniques:

Even parity: If the number of 1's is even in the frame, 0 is added in the frame. The even-parity example shown in the figure below.

Odd parity: If the number of 1's is odd in the frame, 1 is added in the frame. The odd-parity example shown in the figure below.

Cyclic Redundancy Check

The cyclic redundancy check was developed by W-Wesley Peterson in 1961. It is a technique that is used to find errors in digital-data. The cyclic redundancy check is very easy to implement in hardware. It can be analyzed mathematically. The cyclic redundancy check is more effective than VRC and LRC techniques in detecting errors. VRC and LRC are based at the binary-addition, whereas the CRC is based at the binary-division.

The important points of CRC are following in the below.

If the remainder is non-zero arrives after doing the Binary Division, that data is not error-free.

If the remainder zero arrives after doing binary division, that data is error-free.

Answers to 114049: Demonstrate an understanding of Computer Database Management Systems

1. Describe data management issues and how it is addressed by a DBMS

Data management technology that can support easy data access from and to mobile devices is among the main concerns in mobile information systems. Mobile computing may be considered a variation of distributed computing. The two scenarios in which mobile databases is distributed are: Among the wired components, the entire database is distributed, possibly with full or partial replication. A base station or fixed host manages its own database with a DBMS like functionality, with additional functionality for locating mobile units and additional query and transaction management features to meet the requirements of mobile environments.

Among the wired and wireless components, the database is distributed. Among the base stations or fixed hosts and mobile units, the data management responsibility is shared.

Here are some of the issues which arises in data management of the mobile databases:

1. Mobile database design --

Because of the frequent shutdown and for handling the queries, the global name resolution problem is compounded.

2. Security –

The data which is left at the fixed location is more secure as compared to mobile data. That is mobile data is less secure. Data are also becoming more volatile and techniques must be able to compensate for its loss. The most important thing needed in this environment is the authorizing access to critical data and proper techniques.

3. Data distribution and replication –

Uneven distribution of data among the mobile units and the base stations take place here. Higher data availability and low cost of remote access is there in data distribution and replication. The problem of Cache management is compounded by the consistency constraints. The most updated data and frequently accessed data is provided by the Caches to the mobile units. It process their own transactions. There is most efficient access of data and higher security is available.

4. Replication issues –

There is increase of costs for updates and signalling due to increase in number of replicas. Mobile hosts can move anywhere and anytime.

5. Division of labour –

There is a certain change in the division of labour in query processing because of certain characteristics of the mobile environment. There are some of the cases in which the client must function independently of the server.

6. Transaction models –

In mobile environment, the issues of correctness of transactions and fault tolerance are aggravated. All transactions must satisfy the ACID properties, these are atomic, consistency, isolation, and durability.

Depending upon the movement of the mobile unit, possibly on multiple data sets and through several base station, a mobile transaction is executed sequentially. When the mobile computers are disconnected, ACID properties gets hard to enforce. Because of the disconnection in mobile units, there is expectation that a mobile transaction will be lived long.

7. Recovery and fault tolerance –

Fault tolerance is the ability of a system to perform its function correctly even in the presence of internal faults. Faults can be classified in two types: transient and permanent. Without any apparent intervention, a transient fault will be eventually disappeared but a permanent fault will remain unless it is removed by some external agency.

The mobile database environment must deal with site, transaction, media, and communication failures. Due to limited battery power there is a site failure at MU. If a voluntary shutdown occurs in MU, then it should not be treated as a failure. Whenever Mu crosses the cells, most frequently there will be a transaction failures during handoff. Due to failure of MU, there is a big cause of network partitioning and affection of the routing algorithms. The characterization of mobile computing is done by:

Limiting resource availability

Frequent disconnection

High mobility

Low bandwidth

8. Location based service –

One of the most challenging tasks which must be undertaken is determining the location of mobile users, which must be undertaken in order to enable a location based service. A cache information becomes stale when clients move location dependent. Eviction techniques are important in this case. Issues that arises in location and services are:

User Privacy

Diverse mobile mapping standards

Market capability

Interoperability

Updation of the location dependent queries and then applying spatial queries to refresh the cache causes a problem.

9. Query processing –

Because of the mobility and rapid resource changes of mobile units, Query optimization becomes the most complicated. That is query processing is affected when mobility is considered. There is a need to returned a query response to mobile units that may be in transit. The cost that affects the most in centralized environments is the input/output.

Communication cost is the most important in distributed environments. It is possible to formulate location dependent queries. There is difficulty in estimating the communication costs in distributed environments because the mobile host may be situated in different locations. There is a requirement of dynamic optimization strategies in the mobile distributed context.

2. Describe commonly implemented features of commercial database management systems.

Features of Database Management System (DBMS): The scope of Database management system is not hidden from any organization. Everyone knows that how important database management system is if they want to manage their precious data securely. So it has become necessary for every organization to opt for DBMS. Here we are sharing few most important features of database management system.

Features of Database Management System (DBMS)

Minimum Duplication and Redundancy

Because there are many users who use the database so chances of data duplicity are very high. As in database management system, data files are shared that in turns minimizes data duplication and redundancy. All the information in database management system occurs only once so chances of duplicity are very less.

Saves Storage Space and Cost

All the Database management systems have a lot of data to save. But proper integration of data saves much more space in DBMS. Companies are paying so much amount of money to store data. If they have managed data to storing then it will save their cost of storing data and data entry.

Anyone Can Work on It

Users who are not having any technical skills can work on database management system. The query language provided by DBMS is so easy to understand. If you want to update, insert, delete and search any record then it is very easy with the help of queries provided by DBMS. Any non programming user can do this without any help of skilled programmer.

Large Database Maintenance

Large databases of big companies can be maintained only by database management system. These databases require lots of security and other feature like backup and recovery. All these features are contained in DBMS. It can maintain a database with lots of data and information.

Features of Database Management System-

Features of Database Management System

Provides High Level of Security

Security is a very big concern for all the organizations who are handling a large amount of data. DBMS doesn't give the full access of database except DBA or head of the department. They are able to alter the database and all the users are created by them so security level of DBMS becomes so high. No other person or user can access the full database; all of them have restrictions according to their work.

Permanent Storage of Data

DBMS stores all the data files permanently and there is no chance of any loss of data. If somehow the data get lost then there is a backup and recovery method too that can save organization's data files. So no need to worry about data loss in DBMS.

Multi-user Access

In DBMS, multiple users can access all kind data and information stored in one data store. There are certain limits that users can access or view particular data according to the rights given to them. This increases the security and privacy of data for users because they will have their own interface to access data.

3. Describe different type of DBMS's

Types of DBMS

The types of DBMS based on data model are as follows –

Relational database.

Object oriented database.

Hierarchical database.

Network database.

Relation Database

A relational database management system (RDBMS) is a system where data is organized in two-dimensional tables using rows and columns.

This is one of the most popular data models which is used in industries. It is based on SQL.

Every table in a database has a key field which uniquely identifies each record.

This type of system is the most widely used DBMS.

Relational database management system software is available for personal computers, workstation and large mainframe systems.

For example – Oracle Database, MySQL, Microsoft SQL Server etc.

In the above student table Std ID, Name and city are called as attributes and their values. Std ID is a primary key attribute which uniquely identifies each record in the student table.

Object Oriented Database

It is a system where information or data is represented in the form of objects which is used in object-oriented programming.

It is a combination of relational database concepts and object-oriented principles.

Relational database concepts are concurrency control, transactions, etc.

OOPs principles are data encapsulation, inheritance, and polymorphism.

It requires less code and is easy to maintain.

For example – Object DB software.

The object oriented database is represented in diagram format below –

Hierarchical Database

It is a system where the data elements have a one to many relationship (1: N). Here data is organized like a tree which is similar to a folder structure in your computer system.

The hierarchy starts from the root node, connecting all the child nodes to the parent node.

It is used in industry on mainframe platforms.

For example– IMS(IBM), Windows registry (Microsoft).

An example of a hierarchical database is given below –

Network database

A Network database management system is a system where the data elements maintain one to one relationship (1: 1) or many to many relationship (N: N).

It also has a hierarchical structure, but the data is organized like a graph and it is allowed to have more than one parent for one child record.

Answer to 115391: Demonstrate an understanding of the principles of the internet and the world-wide-web

1. Explain the principles of the internet and the world-wide web.

ICANN, the Internet Corporation for Assigned Names and Numbers, which by an act of Congress has the primary responsibility for ensuring web stability and uniformity is turning out to be the perhaps the greatest threat to the stability and uniformity of the world wide web.

For over 15 years the federal government's limits on ICANN have ensured that it promoted the best interests of the web and the world's users. Operating under U.S. laws and under the limits of the U.S. Constitution, Americans – and indeed the world's citizens – have benefited from a predictable and reliable World Wide Web experience.

However, once the chords between Washington and ICANN's are cut, unless we act careful, we'll also sever many of the benefits of the web that we've come to expect. ICANN says we shouldn't worry – that there wouldn't be any difference in the operation of the World Wide Web after they become autonomous.

But that isn't true. For instance, there would be nothing to prevent ICANN from relocating outside of the jurisdiction of America's legal system. Even the simplest legal disputes involving internet governance could be transformed if ICANN were to "move" to Turkey, Qatar, or even Russia.

Also once the U.S.'s predominate role is ended, what's to stop other countries – those with far less sympathies for free thought, association, and information-sharing – from becoming more influential in the operations of ICANN?

There are many nations that desire to place broad limits on citizen access to the Internet. Presently the internet-averse countries operate by placing significant restrictions on the ISP's (Internet Service Providers). However, those restrictions have some limitations. Imagine a world where these countries could dictate directly to ICANN. They could place limits not just on what their own citizens have access to, but they also could restrict the access of the entire world.

While ICANN and its supporters say that such claims are just fear mongering, its recent discussions about changes to its bylaws for the post-transition are not reassuring.

They've put forward a proposal that dramatically changes the role of international governments – one that would shift web governance from America's pro-individual rights perspective to a pro-regime based one.

This isn't just dangerous, it strikes to the heart of whether the World Wide Web – which America created and has made available to the world – will continue to be the most innovative information resource ever invented or if it will become a tool of authoritarian regimes and with access limited to a privileged few.

And in a bizarre move that foreshadows far more divergence from the consensus-based governing system that the U.S. oversight ensured, ICANN has announced this summer that it will be the final decision-maker for any and all “accountability” measures that it will operate under. In others, the fox plans to be responsible for regulating its access to the henhouse.

Instead of giving America and the world the assurance that this transition will be seamless and imperceptible, exactly the opposite is occurring.

But it's not too late. The transfer hasn't happened and America and the rest of the worlds' stakeholders have some options. One really exciting development has been the release of the “Key Principles for Coordination of Internet Unique Identifiers.”

Created by a diverse group of internet users and developers, the principles provide the kind of direction and accountability necessary to ensure a vibrant and accessible World Wide Web. They define the authority and accountability of ICANN and its stakeholders, ensure an appropriate separation of functions – policy-making, dispute resolution with defined rights and responsibilities and finally clarify the importance of ICANN operating free of special interest or rogue regime influence.

Like the U.S. Constitution, by separating power and dividing responsibilities, the “Key Principles” are critical to guaranteeing that regardless of the oversight mechanisms of ICANN, all users of the World Wide Web (across the globe) will continue to enjoy access and its rules and operations will continue to operate in the consensus based manner that we've all come to appreciate.

2. Explain how the world-wide web incorporates the various internet applications

The Internet has many important applications. Of the various services available via the Internet, the three most important are e-mail, web browsing, and peer-to-peer services. E-mail, also known as electronic mail, is the most widely used and successful of Internet applications. Web browsing is the application that had the greatest influence in dramatic expansion of the Internet and its use during the 1990s. Peer-to-peer networking is the newest of these three Internet applications,

and also the most controversial, because its uses have created problems related to the access and use of copyrighted materials.

E-Mail

Whether judged by volume, popularity, or impact, e-mail has been and continues to be the principal Internet application. This is despite the fact that the underlying technologies have not been altered significantly since the early 1980s. In recent years, the continuing rapid growth in the use and volume of e-mail has been fueled by two factors. The first is the increasing numbers of Internet Service Providers (ISPs) offering this service, and secondly, because the number of physical devices capable of supporting e-mail has grown to include highly portable devices such as personal digital assistants (PDAs) and cellular telephones.

The volume of e-mail also continues to increase because there are more users, and because users now have the ability to attach documents of various types to e-mail messages. While this has long been possible, the formulation of Multipurpose Internet Mail Extensions (MIME) and its adoption by software developers has made it much easier to send and receive attachments, including word-processed documents, spreadsheets, and graphics. The result is that the volume of traffic generated by e-mail, as measured in terms of the number of data packets moving across the network, has increased dramatically in recent years, contributing significantly to network congestion.

E-mail has become an important part of personal communications for hundreds of millions of people, many of whom have replaced it for letters or telephone calls. In business, e-mail has become an important advertising medium, particularly in instances where the demand for products and services is time sensitive. For example, tickets for an upcoming sporting event are marketed by sending fans an e-mail message with information about availability and prices of the tickets. In addition, e-mail serves, less obviously, as the basis for some of the more important collaborative applications that have been developed, most notably Lotus Notes.

In the near future, voice-driven applications will play a much larger role on the Internet, and e-mail is sure to be one of the areas in which voice-driven applications will emerge most rapidly. E-mail and voice mail will be integrated, and in the process it seems likely that new models for Internet-based messaging will emerge.

Synchronous communication, in the form of the highly popular "instant messaging," may be a precursor of the messaging models of the near future. Currently epitomized by AOL Instant Messenger and Microsoft's Windows Messenger, instant messaging applications generally allow users to share various types of files (including images, sounds, URLs), stream content, and use the Internet as a medium for

telephony, as well as exchanging messages with other users in real time and participating in online chat rooms.

Web Browsing

The web browser is another Internet application of critical importance. Unlike e-mail, which was developed and then standardized in the early, noncommercial days of the Internet, the web browser was developed in a highly commercialized environment dominated by such corporations as Microsoft and Netscape, and heavily influenced by the World Wide Web Consortium (W3C). While Microsoft and Netscape have played the most obvious parts in the development of the web browser, particularly from the public perspective, the highly influential role of the W3C may be the most significant in the long term.

Founded in 1994 by Tim Berners-Lee, the original architect of the web, the goal of the W3C has been to develop interoperable technologies that lead the web to its full potential as a forum for communication, collaboration, and commerce. What the W3C has been able to do successfully is to develop and promote the adoption of new, open standards for web-based documents. These standards have been designed to make web documents more expressive (Cascading Stylesheets), to provide standardized labeling so that users have a more explicit sense of the content of documents (Platform for Internet Content Selection, or PICS), and to create the basis for more interactive designs (the Extensible Markup Language, or XML). Looking ahead, a principal goal of the W3C is to develop capabilities that are in accordance with Berners-Lee's belief that the web should be a highly collaborative information space.

Microsoft and Netscape dominate the market for web browsers, with Microsoft's Internet Explorer holding about three-quarters of the market, and Netscape holding all but a small fraction of the balance. During the first few years of web growth, the competition between Microsoft and Netscape for the browser market was fierce, and both companies invested heavily in the development of their respective browsers. Changes in business conditions toward the end of the 1990s and growing interest in new models of networked information exchange caused each company to focus less intensely on the development of web browsers, resulting in a marked slowing of their development and an increasing disparity between the standards being developed by W3C and the support offered by Internet Explorer or Netscape Navigator.

Now, the future of the web browser may be short-lived, as standards developers and programmers elaborate the basis for network-aware applications that eliminate the need for the all-purpose browser. It is expected that as protocols such as XML and the Simple Object Access Protocol (SOAP) grow more sophisticated in design and functionality, an end user's interactions with the web will be framed largely by

desktop applications called in the services of specific types of documents called from remote sources.

The open source model has important implications for the future development of web browsers. Because open source versions of Netscape have been developed on a modular basis, and because the source code is available with few constraints on its use, new or improved services can be added quickly and with relative ease. In addition, open source development has accelerated efforts to integrate web browsers and file managers. These efforts, which are aimed at reducing functional distinctions between local and network-accessible resources, may be viewed as an important element in the development of the "seamless" information space that Berners-Lee envisions for the future of the web.

Peer-To-Peer Computing

One of the fastest growing, most controversial, and potentially most important areas of Internet applications is peer-to-peer (P2P) networking. Peer-to-peer networking is based on the sharing of physical resources, such as hard drives, processing cycles, and individual files among computers and other intelligent devices. Unlike client-server networking, where some computers are dedicated to serving other computers, each computer in peer-to-peer networking has equivalent capabilities and responsibilities.

Internet-based peer-to-peer applications position the desktop at the center of a computing matrix, usually on the basis of "cross-network" protocols such as the Simple Object Access Protocol (SOAP) or XML-RPC (Remote Procedure Calling), thus enabling users to participate in the Internet more interactively.

There are two basic P2P models in use today. The first model is based on a central host computer that coordinates the exchange of files by indexing the files available across a network of peer computers. This model has been highly controversial because it has been employed widely to support the unlicensed exchange of commercial sound recordings, software, and other copyrighted materials. Under the second model, which may prove ultimately to be far more important, peer-to-peer applications aggregate and use otherwise idle resources residing on low-end devices to support high-demand computations. For example, a specially designed screensaver running on a networked computer may be employed to process astronomical or medical data.

The Future

The remarkable developments during the late 1990s and early 2000s suggest that making accurate predictions about the next generation of Internet applications is difficult, if not impossible. Two aspects of the future of the Internet that one can be

certain of, however, are that network bandwidth will be much greater, and that greater bandwidth and its management will be critical factors in the development and deployment of new applications. What will greater bandwidth yield? In the long run, it is difficult to know, but in the short term it seems reasonable to expect new communication models, videoconferencing, increasingly powerful tools for collaborative work across local and wide area networks, and the emergence of the network as a computational service of unprecedented power.

Answers to 114055 Demonstrate an awareness of ethics and professionalism for the computer industry in South Africa

1. Describe professionalism for the computer industry in South Africa.

Professionalism may be considered as behaving in an appropriate manner and adhering to accepted principles and practices. Professionalism is required not only in the field of Information Technology but also in other fields in order to bring about reputation, ethical behaviour and add value to any organization.

2. Describe the codes of practice for professionalism in the IT industry in South Africa.

What is the code of practice in the IT industry in South Africa?

A member of the Institute of Information Technology Professionals South Africa will: Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing. Avoid harm. Be honest and trustworthy. What are three ethical responsibilities expected from a computer professional?

The some ethical guidelines for computer professionals are: ☐ Respect Confidentiality ☐ Honest & Fair ☐ Maintain professional competence ☐ Respects and protection of personal privacy ☐ Understand relevant law ☐ Avoid harming others ☐ Respects property rights ☐ UNDERSTAND WHAT SUCCESS MEANS: The developers & users of ...

What are the key aspects of an industry code of practice?

An industry code of conduct will set out a framework for compliance through provisions such as:

Specific measures for compliance, relevant guidelines, standards and practices;
Risk management strategies;
Complaint handling schemes and sanctions for non-compliance; and.
An outlined process for periodic review of the code.

3. Describe the code of ethics in the computer industry in South Africa

A member of the Institute of Information Technology Professionals South Africa will:

Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing

Avoid harm

Be honest and trustworthy

Be fair and take action not to discriminate

Respect the work required to produce new ideas, inventions, creative works, and computing artifacts

Respect privacy

Honour confidentiality

Not seek personal advantage to the detriment of the Institute, and will actively seek to enhance the image of the Institute.

What basically affects the computer ethics of computer professional?

To begin with, it seems that there are four big areas of computer ethics. They are “(1) computer crime; (2) responsibility for computer failure; (3) protection of computer property, records, and software; and (4) privacy of the company, workers, and customers”.

What industry best practices mean?

Industry Best Practice means at any time the exercise of that degree of skill, care, diligence, prudence, efficiency, foresight, standards, practices, methods, procedures and timeliness which would be expected at such time from a leading and expert company within the industry, such company seeking to comply with its ...

What are the examples of code of practice?

The model codes of practice are:

How to Manage Work Health and Safety Risks.

Hazardous Manual Tasks.

Managing the Risk of Falls at Workplaces.

Labelling of Workplace Hazardous Chemicals.

Preparation of Safety Data Sheets for Hazardous Chemical.

Confined Spaces.

Managing Noise and Preventing Hearing Loss at Work.

What are the common practices that violate computer ethics?

Professional computer- is a work computer . What are the common practices that violate computer ethics? Common practices that violate computer ethics are theft, deception, harassment and internet usage. These practices in the workplace can lead to termination and possible legal action.

What are the key aspects of professionalism in Information Technology?

It is not only vital in the field of Information Technology but it is also very important in other fields. Some of the key aspects of IT Professionalism are

competence in IT, knowledge, various skills such as soft skills, ethical behaviour and certification.

Which is an important characteristic of a professional?

Let us look at some of the qualities which describe a professional (ACM, 2000)

Trustworthiness: Professional trusts himself in whatever he does and trusts other people. Honesty: Professional is honest when working and follows right code of conduct. Punctuality: It is one of the most important aspects of professionalism.