ANSWER SCHEME

# ICT MODEL PAPER -2 2024

**Janaka Pushpakumara**

**2024 MARCH**

# 1.1

ලේඛන කළමණාකරණය හා සාමූහිකව වැඩ කළ හැකි වීම යන කරුනු දෙක ප්‍රශ්නයේදී අවධාරණය කරන නිසා. OCR නිසා ලේඛන කළමණාකරණයද CLOUD නසා collaboration ද ඉටුවේ.

# 2.1

ලකුණුකරකය හෙවත් PLOTTER යනු මුද්‍රණ යන්ත්‍රයකි. එනම් එයද ප්‍රතිදාන උපාංගයකි. අනෙකුත් සෑම පිළිතුරකම අවම වශයෙන් එක් ආදාන උපාංගයක් ඇත.

# 3.3

**Barcode** සමග මතක තබාගත යුත්තේ super market එකක bill සකස් කරන ආකාරයයිත

**MICR** සමග - චෙක් පත්

**OMR** සමග MCQ

මුද්‍රිත අකුරු ඩිජිටල් වෙනවා නම් **OCR**

# 4.2

නිතර ප්‍රවේශ කරගන්නා- frequently cassessed කියන වචනය තිබෙන නිසා හේ සඳහා පිළිතුර වන්නේ cache mempry. REGISTSRER වල තියෙන්නේ දැනට ක්‍රියාත්මක වන ක්‍රියාවලියට අදාල වහාම අවශ්‍ය වන දත්ත නමුත් CACHE වසින් නිතර නිතර භාවිතයට ගන්නා දත්ත වඩා විශාල ප්‍රමාණයෙන් තබා ගනියි.

Cache clear

# 5.1

**HUB:** සියලුම සම්බන්ධිත උපාංග වෙත දත්ත විකාශනය කරයි.
**SWTCH:** MAC ලිපින මත පදනම්ව අපේක්ෂිත ලබන්නාට පමණක් දත්ත යොමු කරයි.
**HUB:** සම්බන්ධිත උපාංග අතර ගැටීම් ඇති කරන සහ band wdth බෙදා ගන්නා බැවින්, අඩු කාර්යක්ෂම වේ.
**SWTCH:** වඩාත් කාර්යක්ෂම, එය ගැටුම් (collisions) අවම කරන අතර එක් එක් Posrt කැප වූ band width වෙන් කරයි.
**HUB:** හවුල් කලාප පළල සහ ගැටීම් හේතුවෙන් මන්දගාමී කාර්ය සාධනයක් ඇත.
**SWTCH:** කැපවූ bandwidth සහ අඩු collisons හේතුවෙන් වේගවත් කාර්ය සාධනය ක් ඇත.

# 6.1

Base 2 to decimal calculation:

$(1010)_2 = (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0) = (10)_{10}$

Base 8 to decimal calculation:

$(22)_8 = (2 \times 8^1) + (2 \times 8^0) = (18)_{10}$

Base 16 to decimal calculation:

$(1B)_{16} = (1 \times 16^1) + (11 \times 16^0) = (27)_{10}$

# 7.1

Base 16 to decimal calculation:

$(3A7F)_{16} = (3 \times 16^3) + (10 \times 16^2) + (7 \times 16^1) + (15 \times 16^0) = (14975)_{10}$

# 8.1

Base 8 to decimal calculation:

$(\square)_8 = (1 \times 8^3) + (2 \times 8^2) + (4 \times 8^1) + (7 \times 8^0) = (679)_{10}$

Decimal to base 16 calculation:

Divide by the base to get the digits from the remainders:

| Division | Quotient | Remainder (Digit) | Digit # |
|---|---|---|---|
| 679/16 | 42 | 7 | 0 |
| 42/16 | 2 | 10 | 1 |
| 2/16 | 0 | 2 | 2 |

$= (2A7)_{16}$

# 9.3

High-resolution images: 4GB = 4 * 1024MB = 4096MB
SDK package: 2GB = 2 * 1024MB = 2048MB
Video tutorials: 4GB = 4 * 1024MB = 4096MB
Total storage needed: 4096MB + 2048MB + 4096MB = 10240MB

# 10.2

01000010 01100011 01100001

# 11.2

මෙහි NAND ද්වාරය ගැන පමණක් විමසනු ලැබෙයි. ඒ අනුව ආදාන Bහා C වෙයි. ප්‍රතිදානය $\overline{(B.C)}$

# 12.1

1. **Origin**: The "Ctrl+Z" shortcut originated from the Xerox Alto computer system developed in the 1970s. It was one of the first computer systems to introduce the concept of a graphical user interface (GUI) and the associated keyboard shortcuts.
2. **Undo Functionality**: Ctrl+Z is widely used to undo the most recent action performed by a user in many software applications, including word processors, graphic design programs, text editors, and more.
3. **Universal Shortcut**: Ctrl+Z is a universal shortcut across many platforms and operating systems, including Windows, macOS, Linux, and various applications within these systems.
4. **Keyboard Layouts**: While Ctrl+Z is the standard shortcut for undo on English keyboards, the shortcut may vary slightly on keyboards with different layouts or languages. For example, on some non-English keyboards, it might be Ctrl+Y or Ctrl+Backspace.
5. **Multiple Undo Levels**: In many applications, Ctrl+Z doesn't just undo the last action; it often allows users to step back through multiple actions, providing a history of changes. The number of undo levels available varies depending on the application and its settings.
6. **Redo Functionality**: In many applications, Ctrl+Z is paired with Ctrl+Y, which is used to redo an action that has been undone. This allows users to toggle back and forth between different states of their work.
7. **Non-Keyboard Methods**: While Ctrl+Z is the most common way to undo actions, some programs also offer alternative methods, such as selecting "Undo" from the menu bar or using a dedicated toolbar button.
8. **Prevalence in Programming**: Ctrl+Z is not only used in user interfaces but also in development environments and text editors for programmers. It's often used to undo code changes or revert to a previous state of a file.
9. **Life Metaphor**: The concept of undoing actions with Ctrl+Z has become so ingrained in modern computing that it's sometimes humorously referenced as a wishful feature for life situations, implying the desire to "undo" or reverse past decisions or actions.
10. **Customization**: Some software applications allow users to customize keyboard shortcuts, including the Ctrl+Z combination, to better suit their preferences or workflow.

# 13.4

HUB:·සියලුම·සම්බන්ධිත·උපාංග·වෙත·දත්ත·විකාශනය·කරයි.¶
SWTCH:·MAC·ලිපින·මත·පදනම්ව·අපේක්ෂිත·ලබන්නාට·පමණක්·දත්ත·යොමු·කරයි.¶
HUB:· සම්බන්ධිත· උපාංග· අතර· ගැටීම්· ඇති· කරන· සහ· band·wdth·බෙදා·ගන්නා·බැවින්,·අඩු·කාර්යක්ෂම·වේ.¶
SWTCH:·වඩාත්·කාර්යක්ෂම,·එය·ගැටුම්·(collisions)·අවම·කරන·අතර·එක්·එක්·Posrt·කැප·වූ·band·width·වෙන්·කරයි.¶
HUB:·හවුල්·කලාප·පළල·සහ·ගැටීම්·හේතුවෙන්·මන්දගාමී·කාර්ය·සාධනයක්·ඇත.·¶
SWTCH:·කැපවූ·bandwidth·සහ·අඩු·collisons·හේතුවෙන්·වේගවත්·කාර්ය·සාධනය·ක්·ඇත.¶

**Microsoft Word:**

- Go to the "Home" tab on the ribbon.
- Look for the "Paragraph" group.
- Find the icon that resembles a paragraph symbol (¶), typically labeled as "Show/Hide" or "Formatting Marks."
- Click on this icon to toggle the display of non-printing characters on and off.
- With this feature enabled, spaces will be represented by a small dot (·), tabs by a right-pointing arrow (→), and paragraph marks by the pilcrow symbol (¶). Line breaks are often indicated by a line or arrow symbol.

This feature allows you to visually identify and correct irregular spacing between words by revealing the hidden characters causing the spacing issues.

# 14.4

- වදන් සැකසුම් මෘදුකාංගයට ප්‍රවේශය සඳහා මදල් ගෙවා ලබාගන්නා දායකත්වයක් (paid subscription) අවශ්‍ය වන අතර කිසිදු නිදහස් අනුවාදයක් (versions) ලබා නොදේ. - **නිදහස් විවෘත්ත ඒවා තියනව Open office writer වගේ**
- වදන් සැකසුම් මෘදුකාංග තත්‍ය කාලීනව (real-time) බහු පරිශීලකයින් (multiple users) අතර සහයෝගීතාවටයන් සංස්කරණයට ඉඩ නොදේ. **- පුළුවන් google docs වගේ online word processing වල පුළුවන්.**
- වදන් සැකසුම් මෘදුකාංග ලේඛන සංස්කරණය සඳහා පෙරනිමි සැකිලි (templates) භාවිතා කිරීමට සහාය නොදක්වයි.- **resumes, letters, reports, newsletters, and more. These layouts often include placeholders for text, images, headers, footers වගේ කලින් සකස් කරල තියන සැකිලි යොදාගන්න පුළුවන් වදන් සැකසුම් මෘදුකාංග වල.**
- වදන් සැකසුම් මෘදුකාංගයට PDF ආකෘතියෙන් ලේඛන සුරක්ෂා (export documents) කළ නොහැක. - **පුළුවන්**

# 15.4

- **Ctrl+Y:** This keyboard shortcut is commonly used for redoing an action that has been undone. In many applications, it serves as the "redo" command, allowing users to reverse the effects of the most recent undo operation. Essentially, it performs the opposite function of Ctrl+Z (undo).
- **Ctrl+B:** This keyboard shortcut is typically used to apply bold formatting to selected text. In word processing software and text editors, pressing Ctrl+B toggles the bold attribute on or off for the selected text, making it appear in a thicker or heavier font style.
- **Ctrl+P:** This keyboard shortcut is commonly used to open the print dialog box in many applications. Pressing Ctrl+P brings up the print options, allowing users to configure printing settings such as the printer selection, page orientation, number of copies, and more before sending the document to the printer.
- **Ctrl+F:** This keyboard shortcut is widely used for initiating a "find" or "search" operation within a document or application. Pressing Ctrl+F typically opens a search box or panel where users can enter a keyword or phrase to search for occurrences within the text or content. It's a convenient way to locate specific information quickly within a large document or webpage.

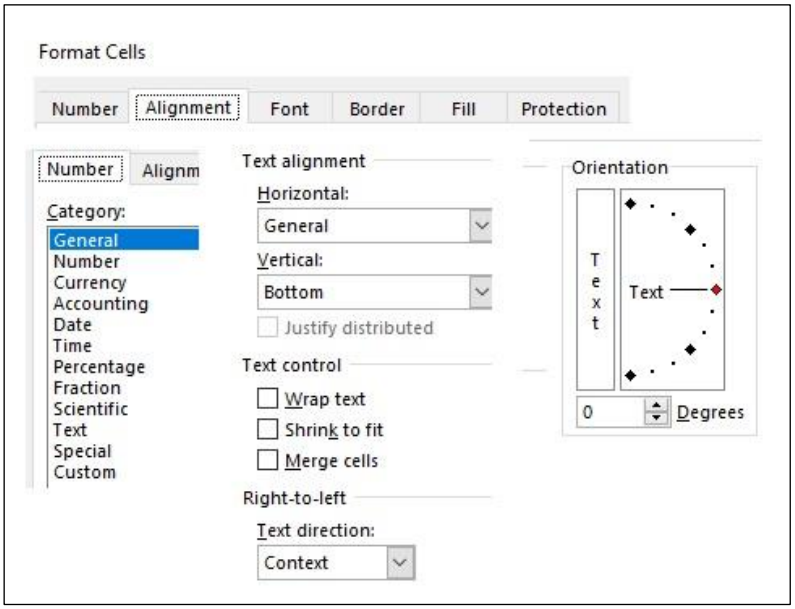
# 16.4

තනි කෝෂය නිරපේක්ෂ කළ යුතු ය. එවිට එය කුමන කෝෂයකට ලිපත් කළ ද කෝෂ යොමුව වෙනස් නොවී නියතව පවතී. මේ නිසා තනි කෝෂයක් කෝෂ කිහිපයක් සමග ගණිත කර්මයක් සිදුවීමේදී තනිව පවතින කෝෂය නිරපේක්ෂ කළ යුතු ය. මෙහිදී පහළට සූත්‍රය පිටපත් වන බැවින් තීරු ඉලක්කම කොහොමත් වෙනස් වෙන්නේ නැති නිසා =$A$1 * B1 වෙනුවට =A$1 * B1ලෙස ද ලිවිය හැක.

# 17.1

මෙහි දී A1 සිට D4 දක්වා කෝෂ පරාසය තුල පවතින් සංඛ්‍යාත්මක අගයන් සහිත කෝෂ ගණන ගණනය කිරීමට සුදුවන නිසා ab ලෙස දැක්වෙන text කොටස නොසකනු ලැබේ. ඒ නිසා සංඛ්‍යාත්මක අගයන් සහිත කෝෂ 9 ක් තිබේ.

# 18.1




මෙම editing පිළිබඳව දරුවන්ගේ අවධානය යොමු කරවන්න

# 19.2

# 20.2

# 21.4

# 22.4

# 23.4

Bootstrap is not a content management system (CMS). Instead, it is a popular front-end framework used for developing responsive and mobile-first websites and web applications. Bootstrap provides a collection of pre-designed HTML, CSS, and JavaScript components and templates to help developers quickly create visually appealing and responsive user interfaces. While Bootstrap is widely used in web development, it is not a CMS like WordPress, Drupal, or Joomla, which are specifically designed for managing website content.

# 24.3

SVG

SVG stands for Scalable Vector Graphics. It is a popular XML-based file format used for vector graphics on the web. SVG files can be scaled to ***any size without losing quality, making them ideal for logos, icons, illustrations, and other graphical elements*** that need to be displayed at various resolutions. Unlike raster formats like JPEG (.JPEG) or PNG (.PNG), which use a grid of pixels to represent images, SVG files describe shapes and lines using mathematical equations, allowing them to maintain sharpness and clarity regardless of size.

PNG raster?

PNG (Portable Network Graphics) is a raster graphics file format, not a vector graphics format. PNG files store images as a grid of pixels, similar to formats like JPEG and GIF. **While PNG supports transparency and lossless compression**, it is not suitable for scaling without loss of quality like vector graphics formats such as SVG.

So, to clarify:

PNG (.PNG) is a raster graphics format, commonly used for images on the web that **require transparency and high-quality compression.**

The correct answer to the question is:

iii. .SVG

# 25.3

INITIALIZING

| Counter | Number | Output (print) |
|---|---|---|
| 1 | 3 | 3 |

ROUNDS

| Counter | Number | Output (print) |
|---|---|---|
| 2 | 9 | 9 |
| 3 | 27 | 27 |
| 4 | 81 | 81 |

```
1  program OutputSequence;
2  var number, counter:Integer;
3  begin
4  number:= 3;
5  counter:= 1;
6
7  writeln (number);
8  while counter
9    <4
10   do
11   begin number:= number * 3;
12   writeln (number);
13 counter:= counter + 1;
14   end;
15   end.
```

# 26.2

The purpose of the 'counter' variable in the flowchart is:

**It keeps track of the number of iterations in the loop.**
ලූපයේ පුණර්කරණ වාර ගණන (number of iterations) තබාගැනීමට ය.

The 'counter' variable is used to control the loop and ensure that it terminates after a certain number of iterations. It starts with an initial value, typically 1, and increments by 1 in each iteration until it reaches a certain condition, which determines when the loop should stop. In this specific case, the loop stops when 'counter' reaches a value of 4, ensuring that the sequence is generated for exactly 4 iterations.

# 27.1

මෙහි, 'සංඛ්‍යා' විචල්‍යය මඟින් සංඛ්‍යා අනුපිළිවෙලක් නියෝජනය කරයි, එය 3 සිට ආරම්භ වන අතර එක් එක් පුනර්කරණය තුළ 3 ගුණයකින් වැඩි වේ. අනුපිළිවෙලෙහි ඇති සංඛ්‍යා පූර්ණ සංඛ්‍යා (3, 9, 27, 81, ...) බැවින්, 'සංඛ්‍යා' විචල්‍යයේ ආරම්භය සඳහා සුදුසු දත්ත වර්ගය වන්නේ:
In the flowchart, the 'number' variable represents a sequence of numbers, starting from 3 and increasing by a factor of 3 in each iteration. Since the numbers in the sequence are whole numbers (3, 9, 27, 81, ...), the appropriate data type for the initialization of the 'number' variable is:

i. Integer

The Integer data type is used for whole numbers without any fractional or decimal part, making it suitable for representing the numbers in the sequence

# 28.2

Based on the given array myArray, where the elements are 5, 8, and 7, and assuming the array is 1-indexed (as indicated by the array declaration array[1..3] of Integer), the value of the element at index 2 is 8.

In Pascal, array indexing typically starts from 1, so index 1 corresponds to the first element, index 2 corresponds to the second element, and so on. Therefore, the element at index 2 in myArray is 8.

# 29.2

This is a nested loop (a for-loop inside another for-loop), is an example of structured programming. In structured programming, programs are organized into clear, modular structures like sequences, selections, and iterations (loops). Nested loops, like the one you've shown, are a common structure used to perform repetitive tasks in a structured manner.

The specific type of loop used in this pseudo code is a nested for-loop, where one loop is nested inside another. This is a common construct in many programming languages for executing a set of statements multiple times within another loop.

```
1  program NestedLoopsExample;
2
3  var
4    i, j: Integer;
5
6  begin
7    // Outer loop from 1 to 3
8    for i := 1 to 3 do
9    begin
10     // Inner loop from 1 to 4
11     for j := 1 to 4 do
12     begin
13       // Displaying (i, j) pair
14       write( i, j);
15     end;
16   end;
17 end.
```

```
17 lines compiled, 0.0 sec
11121314212223243132 3334
```

| i | j | Output |
|---|---|---|
| 1 | 1 | 11 |
| 1 | 2 | 12 |
| 1 | 3 | 13 |
| 1 | 4 | 14 |
| 2 | 1 | 21 |
| 2 | 2 | 22 |
| 2 | 3 | 23 |
| 2 | 4 | 24 |
| 3 | 1 | 31 |
| 3 | 2 | 31 |
| 3 | 3 | 33 |
| 3 | 4 | 34 |

11121314212223243132 3334

# 30.1

- The variable i is initialized to 1.
- Inside the repeat-until loop, the value of i is displayed using writeln, and then i is incremented by 1.
- The loop continues to execute until i becomes greater than 5.
- Once i exceeds 5, the loop terminates, and the program ends.

- The output of this program will be the numbers from 1 to 5, each printed on a new line.

```
1  program RepeatUntilExample;
2
3  var
4    i: Integer;
5
6  begin
7    i := 1;
8    repeat
9      writeln(i);
10     i := i + 1;
11   until i > 5;
12 end.
13
```

| i | output |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |

```
12 lines compiled, 0.1 sec
1
2
3
4
5
```

# 31.1

This loop will be executed 5 times. It starts with num initialized to 5 and decrements num by 1 in each iteration until num becomes 0. Therefore, the loop will execute when num is 5, 4, 3, 2, and 1, for a total of 5 executions.

```
1  Program DisplayNumbers;
2
3  var
4    num: integer;
5
6  Begin
7    num := 5;
8    while num > 0 do
9    begin
10     writeln(num);
11     num := num - 1;
12   end;
13 End.
```

```
Compiling main
Linking a.out
12 lines compi
5
4
3
2
1
```

# 32.3

The statement that is FALSE about compilers is:

iii. Compilers execute source code line by line.

Compilers do not execute source code line by line. Instead, they analyze the entire program, perform syntax and semantic analysis, and translate the entire program into machine code or an intermediate representation before generating an executable file or object code. The generated executable file can then be executed independently of the compiler.

# 33.3

1. `(3 > 4) OR (5 < 10)`:
   - `(3 > 4)` is FALSE
   - `(5 < 10)` is TRUE
   - `FALSE OR TRUE` evaluates to TRUE
2. `(3 > 4) AND (6 = 6)`:
   - `(3 > 4)` is FALSE
   - `(6 = 6)` is TRUE
   - `FALSE AND TRUE` evaluates to FALSE
3. `(5 < 10) OR (6 = 6)`:
   - `(5 < 10)` is TRUE
   - `(6 = 6)` is TRUE
   - `TRUE OR TRUE` evaluates to TRUE

So, the expression that evaluates to TRUE is `ii) 1 and 3`.

# 34.1

During the Maintenance phase of the Software Development Life Cycle (SDLC), the activity that is typically NOT performed is:

i. Designing system architecture

The Maintenance phase primarily deals with the upkeep of the existing software system rather than designing new architectures. The other activities listed—bug fixes and patches, performance optimization, and adding new features—are common activities during the Maintenance phase as they involve improving, fixing, or enhancing the existing software.

# 35.2

During the coding phase of software development, the activity that typically occurs is:

ii. Writing source code

The coding phase is primarily focused on writing and implementing the source code based on the identified system requirements. Activities such as creating user documentation and identifying system requirements usually occur in earlier phases such as the requirements analysis and design phases. Conducting system testing typically occurs in later phases such as the testing phase.

# 36.4

The correct format for an IP address is:

iv. xxx.xxx.xxx.xxx

IP addresses are typically represented in a dotted-decimal format, where each section is a decimal number ranging from 0 to 255. The format consists of four sets of numbers separated by periods.

# 37.4

The main purpose of Domain Name Server (DNS) is:

ii. Translating domain names to IP addresses

DNS servers maintain a directory of domain names and their corresponding IP addresses. When you type a domain name into your web browser, the DNS server translates that domain name into the corresponding IP address, allowing your device to connect to the correct web server on the internet. This translation process is crucial for internet communication, as it enables users to access websites and services using human-readable domain names rather than remembering and inputting numerical IP addresses.

# 38.4

A common feature in video conferencing software is:

iv. Screen sharing

Screen sharing allows participants in a video conference to share their computer screens with others in the meeting. This feature is commonly used for presentations, demonstrations, collaborations, and troubleshooting purposes. It enables users to show documents, slideshows, software applications, web browsers, or any other content on their screens to all participants in the conference.

# 39.1

n email terminology, "CC" stands for:

i. Carbon Copy

When you "CC" someone on an email, you're sending them a copy of the email for their information, even though they're not the primary recipient. This term originated from the practice of using carbon paper to make copies of documents typed or written on a typewriter.

The other options listed—virtual reality integration, teleportation capabilities, and time travel simulation—are not common features found in standard video conferencing software.

# 40.3

The HTML attribute that is NOT used with the table element is:

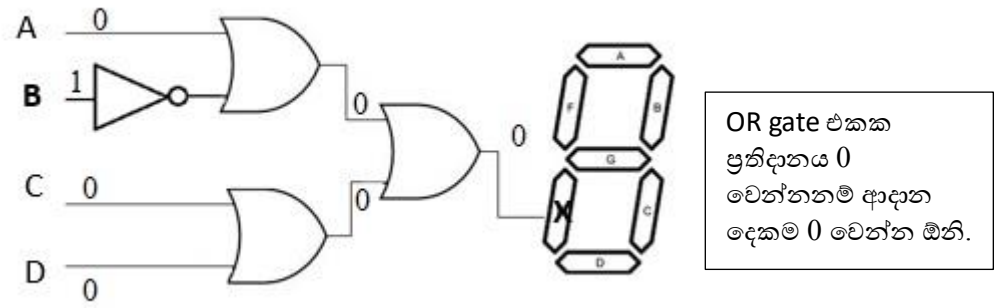
iii. alt

The "alt" attribute is typically used with the <img> element in HTML to provide alternative text for images. It is not used with the <table> element.

The other attributes listed—align, border, and cellpadding—are commonly used with the <table> element to control the alignment, border properties, and cell padding of the table, respectively

PAPER 2

| | | |
|---|---|---|
| 1 | i | **Input:**<br>Data regarding recent cyber threats and network activity entered by Amal into the network security system.<br><br>**Process:**<br>The network security system analyzes the entered data to identify potential security breaches or suspicious activities.<br><br>**Outputs:**<br>Summary report:<br>Highlights any detected abnormalities in network activity.<br>Provides alerts for immediate attention regarding potential security breaches.<br>Offers recommendations for enhancing network defenses to mitigate cybersecurity risks<br>Generated analysis results:<br>Detailed findings of the system's analysis, including identified security threats and suspicious activities.<br>Specific actions and measures recommended by the system to address and mitigate these threats. |
| | | **Inputs:**<br><br>**Data regarding recent cyber threats**: This includes information on known threats, such as malware, phishing attempts, hacking attempts, etc.<br>**Network activity data**: Information about the network traffic, including incoming and outgoing connections, data transfers, user activities, etc. This data helps in identifying patterns and anomalies.<br><br>**Process**:<br><br>**Data insertion**: Amal logs into the system and inserts the collected data regarding recent cyber threats and network activity.<br>**Analysis:** The network security system analyzes the inserted data to detect potential security breaches or suspicious activities. This analysis involves various algorithms and techniques to identify patterns, anomalies, and known attack signatures.<br>**Identification of abnormalities:** The system identifies any deviations from normal network behavior, such as unusual access patterns, unauthorized access attempts, unusual data transfers, etc.<br>Alert generation: If the system detects any potential security breaches or suspicious activities, it generates alerts for immediate attention. These alerts notify Amal and other relevant stakeholders about the identified threats.<br>**Recommendation generation:** Based on the analysis results, the system generates recommendations for enhancing network defenses. These recommendations may include updating security configurations, implementing additional security measures, patching vulnerabilities, etc.<br><br>**Outputs**:<br><br>**Summary report**: The system generates a summary report that highlights any detected abnormalities in network activity, alerts for immediate attention regarding potential security breaches, and recommendations for enhancing network defenses. This report provides a comprehensive overview of the security status of the network.<br>**Actionable insights:** The analysis results provide Amal with actionable insights into the current state of network security. These insights help him proactively safeguard the company's sensitive data and mitigate cybersecurity risks by taking appropriate measures based on the recommendations provided by the system. |
| | | |

| | | |
|---|---|---|
| | ii | a) One type of computer port that Chethana should ensure is working well for connecting his gaming peripherals and accessories is a **USB (Universal Serial Bus**) port.<br><br>**b)**  |
| | iii | a. Hexadecimal to Decimal<br>b. Hexadecimal to Binary |
| | iv |  |
| | v | BIOS stands for **Basic Input/Output System**. It is a firmware interface that initializes hardware during the booting process before handing over control to the operating system.<br><br>POST stands for **Power-On Self-Test**. It is a diagnostic process performed by the BIOS during the boot sequence to ensure that the hardware components of the computer are functioning correctly before loading the operating system |
| | vi | B - Equation |
| | vii | L- U<br>M- V<br>N -T<br>O- S |
| | viii | This code initializes counter to 1 and sum to 0. Then, it enters a while loop where it adds the value of counter to sum and increments counter until counter is greater than or equal to 10.<br><br>However, since counter is initially set to 1 and only increments, it will never be greater than or equal to 10. So, the while loop never executes.<br><br>The value of sum remains 0 because the while loop never executes, and the pseudocode will display 0 as the output.<br><br>So, the output of the given pseudocode would be:<br><br>0 |
| | ix | Waterfall Method<br>• Sequential approach to development.<br>• Divided into distinct phases.<br>• Document-driven process.<br>• Rigid and structured methodology.<br>• Emphasis on extensive planning.<br>• Best suited for stable requirements.<br>• Limited customer involvement during intermediate phases.<br>• High documentation overhead.<br>• Risk of late surprises during testing.<br>• Not ideal for complex or evolving projects. |
| | | |
| | | |
| | | |
| | | |

| | | |
|---|---|---|
| | x | <table><tr><th colspan="2">Month</th><th>Savings</th></tr><tr><td>January</td><td>February</td><td>Rs. 100</td></tr><tr><td>March</td><td>April</td><td>Rs. 150</td></tr></table> |
| | | |
| | | |
| 02 | | **begin**<br>**Input subscribers**<br>**Input watchHours**<br>**if subscribers >= 1000 and watchHours >= 4000 then**<br>**eligibilityStatus := "Eligible for monetization"**<br>**else if subscribers >= 1000 and watchHours < 4000 then**<br>**eligibilityStatus := "Not yet eligible for monetization but making progress"**<br>**else**<br>**eligibilityStatus := "Not eligible for monetization"**<br>**end if**<br>**Display subscribers**<br>**Display watchHours**<br>**Display eligibilityStatus**<br>**end** |
| | | |
| | | **begin**<br>**Input subscribers**<br>**Input watchHours**<br><br>**if subscribers >= 1000 then**<br>**if watchHours >= 4000 then**<br>**eligibilityStatus := "Eligible for monetization"**<br>**else**<br>**eligibilityStatus := "Not yet eligible for monetization but making progress"**<br>**end if**<br>**else**<br>**eligibilityStatus := "Not eligible for monetization"**<br>**end if**<br>**Display subscribers**<br>**Display watchHours**<br>**Display eligibilityStatus**<br>**end** |
| | | |
| | | **program MonetizationEligibility;**<br><br>**var**<br>**subscribers, watchHours: integer;**<br>**eligibilityStatus: string;**<br><br>**begin**<br>**Write('Enter number of subscribers: ');**<br>**ReadLn(subscribers);**<br><br>**Write('Enter total watch hours: ');**<br>**ReadLn(watchHours);**<br>**if (subscribers >= 1000) and (watchHours >= 4000) then**<br>**eligibilityStatus := 'Eligible for monetization'**<br>**else if (subscribers >= 1000) and (watchHours < 4000) then**<br>**eligibilityStatus := 'Not yet eligible for monetization but making progress'**<br>**else**<br>**eligibilityStatus := 'Not eligible for monetization';**<br>**WriteLn('Subscribers:', subscribers);**<br>**WriteLn('Watch Hours:', watchHours);**<br>**WriteLn('Eligibility Status:', eligibilityStatus);**<br>**end.** |

```
program MonetizationEligibility;

var
    subscribers, watchHours: integer;
    eligibilityStatus: string;

begin
    Write('Enter number of subscribers: ');
    ReadLn(subscribers);

    Write('Enter total watch hours: ');
    ReadLn(watchHours);
    if (subscribers >= 1000) and (watchHours >= 4000) then
        eligibilityStatus := 'Eligible for monetization'
    else if (subscribers >= 1000) and (watchHours < 4000) then
        eligibilityStatus := 'Not yet eligible for onetization but makin
    else
        eligibilityStatus := 'Not eligible for monetization';
    WriteLn('Subscribers:', subscribers);
    WriteLn('Watch Hours:', watchHours);
    WriteLn('Eligibility Status:', eligibilityStatus);
    end._
```

| | | |
|---|---|---|
| 03 | i | **D2:D256** |
| | ii | **=MAX(B2:B259)** |
| | iii | **=SUM(B6:E6)** |
| | iv | **=AVERAGE (B254:E254)** |
| | v | • ***Column Chart:*** Displays data in vertical columns. Useful for comparing values across categories.<br>• ***Bar Chart:*** Similar to a column chart, but the data is represented with horizontal bars. Also useful for comparing values across categories.<br>• ***Line Chart:*** Connects data points with straight lines. Ideal for showing trends over time.<br>• ***Pie Chart:*** Represents data in a circular graph, where each category is shown as a slice of the pie. Useful for showing the proportion of each category relative to the whole.<br>• ***Area Chart:*** Similar to a line chart, but the area beneath the line is filled with color. Shows changes in values over time and emphasizes the magnitude of the changes.<br>• ***Scatter Plot:*** Displays individual data points on a two-dimensional graph, where one variable is plotted on the x-axis and the other on the y-axis. Useful for identifying relationships between two variables.<br>• ***Bubble Chart:*** Similar to a scatter plot, but data points are represented as bubbles, with the size of each bubble indicating a third variable.<br>• ***Radar Chart:*** Displays data in a circular graph with multiple axes radiating from the center. Useful for comparing multiple variables across different categories.<br>• ***Stock Chart:*** Specifically designed for tracking the prices of financial instruments over time, such as stocks or currencies.<br>• ***Surface Chart:*** Represents data in a three-dimensional surface plot, where the height of the surface indicates the value of the data points. |

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>4</td><td>i</td><td>

- **Users Table:**
  Primary Key: User_ID
  Corresponding Table: Users Table

- **Access_Log Table:**
  Primary Key: Log_ID
  Corresponding Table: Access_Log Table

</td></tr>
<tr><td></td><td>ii</td><td>

- **User_ID in the Access_Log Table:** This field references the User_ID primary key in the Users Table, establishing a relationship between user access logs and the corresponding user profiles.

- **User_ID in the Security_Log Table:** Similar to the Access_Log Table, this field references the User_ID primary key in the Users Table, linking security-related events or incidents to the specific users involved

</td></tr>
<tr><td></td><td>iii</td><td>

**Table: Access_Log**
**Table: Security_Log**

| Log_ID | User_ID | Login_Time | Logout_Time | IP_Address |
|---|---|---|---|---|
| 4 | 2 | 2024-03-11 11:15:00 | - | - |

| Security_ID | User_ID | Action | Timestamp | Details |
|---|---|---|---|---|
| **4** | **2** | **UnauthorizedAccess** | **2024-03-11 11:15:00** | **An unauthorized user gained access to the system using the credentials of user "bob" and attempted to access sensitive data** |

</td></tr>
<tr><td>5</td><td>iv</td><td>

**Table: Security_Log**

**This new record captures Alice's successful password change event, associating it with her User_ID (1), setting the action as "PasswordChange", and providing additional details about the incident.**

**No updates are necessary in the Users Table or the Access_Log Table for this particular incident, as it pertains solely to a change in security credentials and does not involve login/logout activities**

| Security_ID | User_ID | Action | Timestamp | Details |
|---|---|---|---|---|
| 5 | 1 | PasswordChange | 2024-03-11 12:00:00 | Alice successfully changed her password |

</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>i</td><td>

**x-සත්කාරකිරීම hosting**
**y-පරීක්ෂා කිරීම - testing**

</td></tr>
<tr><td></td><td>ii</td><td>

**A. Search Engine**
**B. JPEG**
**C. WhatsApp**
**D. .edu**
**E. web content**
**F. @ symbol**

</td></tr>
</table>

| | | |
|---|---|---|
| | iii | <table><tr><td>1.</td><td>head</td></tr><tr><td>2.</td><td>h1</td></tr><tr><td>3.</td><td>br</td></tr><tr><td>4.</td><td>ul</td></tr><tr><td>5.</td><td>img</td></tr><tr><td>6.</td><td>border</td></tr><tr><td>7.</td><td>colspan</td></tr><tr><td>8.</td><td>a</td></tr></table> |
| | | |
| | iv | The 'alt' attribute within the 'img' element in HTML is used to provide alternative text for an image. Its purpose is to describe the content or function of the image for users who cannot see it, such as those who use screen readers due to visual impairments or when the image fails to load.<br><br>By including descriptive text in the 'alt' attribute, web developers ensure that users with disabilities or those using text-only browsers can understand the content and context of the image. Additionally, search engines rely on 'alt' text to understand the content of images, which can improve the accessibility and search engine optimization (SEO) of a web page. Overall, using the 'alt' attribute enhances the accessibility, usability, and SEO of web content |
| | | |
| 6 | i | .xcf corresponds to GIMP (GNU Image Manipulation Program)<br>.aup corresponds to Audacity<br>.wlmp corresponds to Windows Movie Maker<br>.vgd corresponds to Vectorian Giotto |
| | | |
| | ii | A. True - GIMP is indeed a raster image processing software.<br>B. False - PNG is a lossless compression file type, not lossy.<br>C. True - The Crop Tool in image editing software can be used to cut or trim graphics as needed.<br>D. True - Video contents can be opened and shared on social networks. |
| | | |
| | iii | amplify |
| | iv | <table><tr><td>V</td><td>Clone stamp tool</td></tr><tr><td>X</td><td>Zoom tool</td></tr><tr><td>Y</td><td>Text tool</td></tr><tr><td>X</td><td>Fuzzy Select tool</td></tr></table> |
| | | |
| | v | The purpose of the "preview/player pane" in the interface of video editing software is to provide users with a real-time or near-real-time preview of the video they are editing. This pane typically displays the current state of the video timeline, allowing users to see how their edits, effects, transitions, and other changes affect the overall composition of the video.<br><br>By having a preview/player pane, users can visualize their edits as they make them, enabling them to make adjustments, fine-tune timing, and ensure the desired visual flow of the video. It also allows them to spot errors or inconsistencies before finalizing the editing process.<br><br>In essence, the preview/player pane serves as a critical visual feedback tool that aids users in crafting and refining their videos to achieve their intended vision.<br><br>වීඩියෝ සංස්කරණ මෘදුකාංගයේ අතුරු මුහුණතේ ඇති "පෙරදසුන කවුළුවේ" අරමුණ වන්නේ පරිශීලකයින්ට ඔවුන් සංස්කරණය කරන වීඩියෝවේ තත්‍ය කාලීන හෝ ආසන්න තත්‍ය කාලීන පෙරදසුනක් ලබා දීමයි. මෙම කවුළුව සාමාන්‍යයෙන් වීඩියෝ කාලරේඛාවේ වත්මන් තත්ත්වය ප්‍රදර්ශනය කරයි, පරිශීලකයින්ට ඔවුන්ගේ සංස්කරණ, විලාශයන්, සංක්‍රාන්ති සහ වෙනත් වෙනස්කම් වීඩියෝවේ සමස්ත සංයුතියට බලපාන්නේ කෙසේදැයි බැලීමට ඉඩ සලසයි.<br><br>පෙරදසුන් කවුළුවක් තිබීමෙන්, පරිශීලකයින්ට ඔවුන්ගේ සංස්කරණ සිදු කරන විට ඒවා දෘශ්‍යමාන කළ හැකි අතර, ඔවුන්ට ගැලපීම් කිරීමට, වේලාව මනාව සකස් කිරීමට සහ වීඩියෝවේ අපේක්ෂිත දෘශ්‍ය ප්‍රවාහය සහතික කිරීමට හැකි වේ. සංස්කරණ ක්‍රියාවලිය අවසන් කිරීමට පෙර දෝෂ හෝ නොගැලපීම් හඳුනා ගැනීමට ද එය ඔවුන්ට ඉඩ සලසයි. |
| | | |

| | | |
|---|---|---|
| 7 | i | a) Two factors that may badly affect the health of the user:<br><br>**Poor posture**: Sitting with one leg bent and the other horizontally, and not touching the back of the seat can lead to strain on the back, neck, and shoulders.<br>**Overloaded electrical outlets:** Plugging multiple devices (phone, fan, computer) into the same extension cord with irregular wire cables can increase the risk of electrical hazards, such as fire or electric shocks.<br><br>b) Two factors that may lead to safety risks of the user and the computer equipment:<br><br>**Overloaded extension cord:** Plugging multiple devices into the same extension cord can overload it, increasing the risk of electrical hazards and potentially damaging the devices.<br>**Irregular wire cables:** Using irregular wire cables can pose a safety risk as they may not be properly insulated, increasing the risk of electrical shocks or short circuits.<br><br>c) Ways to eliminate health and safety risks:<br><br>For health risks:<br>**Encourage proper ergonomic setup:** Provide ergonomic furniture and educate the user about the importance of maintaining correct posture while sitting.<br>• Sit with your back against the chair's backrest.<br>• Keep both feet flat on the floor or on a footrest.<br>• Maintain a slight bend in your knees, with hips slightly higher than your knees.<br>• Keep your elbows close to your body and bent at around a 90-degree angle.<br>• Position your wrists straight and level with your keyboard.<br>• Ensure your computer screen is at eye level and about an arm's length away.<br>• Sit up straight with shoulders relaxed and away from your ears.<br>• Take regular breaks to stand up, stretch, and move around to prevent stiffness and fatigue.<br>**Promote regular breaks and stretching exercises:** Encourage the user to take breaks and perform stretching exercises to relieve muscle tension and prevent stiffness.<br>**For safety risks:**<br>**Use surge protectors:** Replace the overloaded extension cord with surge protectors to distribute power safely and prevent electrical hazards.<br>**Use high-quality cables:** Replace irregular wire cables with high-quality, properly insulated cables to reduce the risk of electrical shocks or short circuits.<br><br>d) Two health problems caused by not following correct posture:<br><br>Back pain: Sitting with poor posture, such as not touching the back of the seat and keeping one leg bent, can lead to strain on the muscles and ligaments of the back, causing back pain.<br>Neck and shoulder tension: Holding the elbows below the keyboard level can lead to strain on the neck and shoulder muscles, resulting in tension, stiffness, and discomfort<br><br>***Back Pain:*** Poor posture, such as slouching or leaning forward, can lead to strain on the muscles and ligaments of the back, causing back pain. This is especially common in the lower back (lumbar region).<br><br>***Neck and Shoulder Tension***: Holding the head forward or in an awkward position for extended periods can strain the muscles of the neck and shoulders, leading to tension, stiffness, and discomfort.<br><br>***Repetitive Strain Injuries (RSIs):*** Incorrect positioning of the wrists, arms, and shoulders can increase the risk of developing RSIs such as carpal tunnel syndrome, tendonitis, or tennis elbow. These conditions result from repetitive movements or awkward postures that put stress on the tendons, nerves, and muscles.<br><br>***Eyestrain and Headaches:*** Incorrect screen positioning or poor lighting can cause eyestrain and headaches. This includes having the screen too close or too far away, inadequate lighting causing glare or reflections on the screen, and improper ergonomic setup leading to discomfort.<br><br>***Fatigue and Reduced Productivity:*** Maintaining poor posture for extended periods can lead to fatigue as muscles become overworked and strained. Additionally, discomfort and pain can distract from tasks, reducing focus and productivity. |

| | | |
|---|---|---|
| | | ***Poor Circulation***: Sitting with improper posture, such as crossing legs or sitting with legs dangling, can restrict blood flow and lead to numbness, tingling, or swelling in the legs and feet. Over time, this can contribute to vascular problems and increase the risk of conditions like deep vein thrombosis (DVT).<br><br>***Carpal Tunnel Syndrome (CTS):*** This is a condition caused by pressure on the median nerve, which runs from the forearm into the palm of the hand. It can lead to numbness, tingling, weakness, or pain in the hand and fingers. CTS is often associated with repetitive motions or awkward hand positions, such as typing or using a computer mouse for extended periods without proper ergonomics.<br><br>***Computer Vision Syndrome (CVS):*** Also known as digital eye strain, CVS refers to a group of eye and vision-related problems that result from prolonged computer, tablet, e-reader, or smartphone use. Symptoms may include eyestrain, headaches, blurred vision, dry eyes, and neck and shoulder pain. CVS is caused by factors such as staring at digital screens for extended periods, poor lighting, glare, improper viewing distances, and poor posture. Taking regular breaks, adjusting screen settings, and ensuring proper ergonomics can help alleviate CVS symptoms. |
| | ii | **Malware:**<br>**D.** Software designed to harm or exploit a computer system or network<br><br>**Ransomware:**<br>**A.** Encrypts files and demands payment for their release.<br><br>**Spyware:**<br>**B**. Secretly monitors and gathers information about a user's activities<br><br>**Adware:**<br>**C.** Displays unwanted advertisements and collects marketing data. |
| | | |
| | iii | he three main strategies for managing e-waste sustainably, focusing on using less, finding new purposes for items, and recycling materials are:<br><br>***Reduce:*** This strategy involves minimizing the generation of e-waste by using electronic devices more efficiently, extending their lifespan through proper maintenance, and making informed purchasing decisions to acquire only what is necessary.<br><br>***Reuse:*** Reusing electronic devices and components by finding new purposes for them or refurbishing them for resale can significantly reduce e-waste. This involves repairing, refurbishing, or repurposing electronics to extend their useful life instead of discarding them prematurely.<br><br>***Recycle***: Recycling e-waste involves collecting, disassembling, and processing electronic devices to recover valuable materials such as metals, plastics, and glass for reuse in manufacturing new products. Proper recycling helps conserve natural resources, reduce energy consumption, and prevent environmental pollution associated with the extraction and processing of raw materials. |