

- 2 (a) Magnetic, optical, solid-state.
  - (b) <u>Magnetic</u>

Advantages:

- Large storage capacity of up to terabytes (TB) of data.
- Relatively cheaper than optical and solid-state external storage.

**Disadvantage:** 

Vulnerable to drops and mechanical shocks.

# **Optical**

Advantage:

Large storage capacity of up to gigabytes (GB) of data.

### Disadvantages:

- Data can only be written once for some non-rewritable formats.
- Lower maximum storage capacity than magnetic external storage.
- Vulnerable to scratches and fingerprints.

## Solid-state

Advantages:

- Much faster than magnetic or optical external storage.
- Not as vulnerable to drops, mechanical shocks, scratches or fingerprints.
- Smaller in size and lighter in weight than magnetic or optical external storage.
- Uses very little power and produces no noise.

# Disadvantage:

- Much more expensive than magnetic or optical external storage.

# **3** Input: Date: date of day; must be a whole number between 1 and 30 inclusive (provided 30 times, once for <u>each</u> day).

Rainfall: rainfall for day; must be a number greater than or equal to 0 (provided 30 times, once for **<u>each</u>** day).

- Output: The date with the lowest amount of rainfall.
- Process: Step 1: Assign 0 to a variable called var\_date.
  - Step 2: Assign 100 to a variable called var\_amount.
  - Step 3: Get the amount of rainfall.
  - Step 4: Check if the amount of rainfall is lesser than the value of var\_amount.

Step 5: If so, assign the amount of rainfall to var\_amount, get the date and assign it to var\_date.

Repeat Step 3 to Step 5 for <u>each</u> day of the month.

- Step 6: Display the value of var\_date.
- 4 decomposition incremental modular pattern recognition generalisation
- 5 (a) NAT
  - (b) GPR
  - (c) K T (note space between K and T)
  - (d) True
  - (e) hello WORLD
- 6 (a)

Number	Tries	Won	Guess	OUTPUT
50				
	5			
		False		
			25	
	4			
				Guess higher
			75	
	3			
				Guess lower

		50	
2			
	True		
0			
			You win

- (b) To guess an assigned number within 5 tries.
- (c) Range check and presence check

Range check ensures that input data is within the required range of values.

Presence check ensures that all the required inputs are provided.

- A compiler translates source code into machine code completely before running while an interpreter translates source code into machine code while the interpreted program is running.
   [1 mark for compiler, 1 mark for interpreter]
- 8 Line 11 WHILE exit\_program = FALSE

Line 16 cca\_counter[my\_cca - 1] += 1

Line 20 IF cca\_counter[i] > highest\_count

Line 22 highest\_count\_index = i

Line 25 OUTPUT cca\_categories[highest\_count\_index]

- 9
- (a) Phishing uses emails and fake websites that appear to be from reputable companies to steal personal information from users.
  - The email claims to be from a company or bank and asks for personal data or confidential information.

- The email uses a generic greeting such as "Dear Customer" or "Dear User".
- The email has inaccurate logos or grammatical and spelling errors that suggest it is not from a legitimate source.
- The email seems to come from a fake sender or from an address or contact that does not match the supposed source of the email.
- The email contains hyperlinks with destinations that do not match what the hyperlink text says or are otherwise unexpected.
- The tone of the email or chat is excessively urgent or threatening. Alternatively, the email may promise an offer that seems too good to be true.
- (b) Pharming, spamming, spyware, Trojan horse, virus, worm.

#### 10 (a) Method 1

2   77 r1 2   38 r1 2   19 r0 2   9 r1 2   4 r1 2   2 r0 2   1 r0   0 r1	2	155	
2   38 r1 2   19 r0 2   9 r1 2   4 r1 2   2 r0 2   1 r0   0 r1	2	77	<b>r1</b>
2   19 r0 2   9 r1 2   4 r1 2   2 r0 2   1 r0   0 r1	2	38	<b>r1</b>
2   9 r1 2   4 r1 2   2 r0 2   1 r0   0 r1	2	19	<b>r</b> 0
2   4 r1 2   2 r0 2   1 r0   0 r1	2	9	<b>r1</b>
2   2 r0 2   1 r0   0 r1	2	4	<b>r1</b>
2   1 r0   0 r1	2	2	<b>r0</b>
0 r1	2	1	<b>r0</b>
		0	<b>r1</b>

Method 2  $2^0 + 2^1 + 2^3 + 2^4 + 2^7$ 

 $155_{10} = 10011011_2$ 

(b)  $0011_2 = 3_{16}$  $1100_2 = C_{16}$ 

 $00111100_2 = 3C_{16}$ 

(c) 
$$(1 \times 16^3) + (14 \times 16^1) + (1 \times 16^0)$$
  
= 4096 + 224 + 1

= 4321

10E1<sub>16</sub> = 4321<sub>10</sub>

- **11 (a)** The number systems are used to control the intensity of the RGB components.
  - (b) Memory dumps, network addresses, ASCII and Unicode, URL encoding.

12 (a)



(b)				
Α	В	С	Working Space	Х
0	0	0		0
0	0	1		1
0	1	0		0
0	1	1		1
1	0	0		0
1	0	1		1
1	1	0		0
1	1	1		0



- (b) COUNT, COUNTA
- (c) ROUND
- (d) =SUM(B8:B12), =B5-E3, =B4\*E1
- (e) B4, B5, B8, B9, B10, B11, B12, E2, E3

Advantages	Disadvantages
<ul> <li>Shared resources: A network allows a group of computers to make use of shared resources such as printers or files.</li> </ul>	<ul> <li>Initial costs: Installing a network could be costly due to the high setup and equipment costs.</li> </ul>
<ul> <li>Shared Internet access: Depending on the network's configuration, every user who logs on to the network may have access to the Internet.</li> </ul>	<ul> <li>Maintenance costs: There are also subsequent costs associated with administering and maintaining the network.</li> </ul>
<ul> <li>Shared software: Software can be stored on the central server of a network and deployed to other computers over a network.</li> </ul>	<ul> <li>Security risks: As files are shared through a network, there is the risk of virus or worm attacks spreading throughout the network even with just one infected computer.</li> </ul>
<ul> <li>Shared storage: Data files can be stored on a central server for ease of access and backup purposes.</li> </ul>	<ul> <li>Risk of data loss: Data may become lost due to hardware failures or errors. Using a network means regular data backups are needed.</li> </ul>
<ul> <li>Communication: Computers in the same network are often able to share instant messages and emails for communication.</li> </ul>	<ul> <li>Server outage: If the server fails, the network will not be able to function, thus affecting work processes.</li> </ul>

### 15 Modem

**16** Wired networks are more reliable as data transmission is unaffected by interference. Wireless networks are less reliable due to potential interference from radio waves and microwaves or blockage from physical obstructions.

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