



UNITED ARAB EMIRATES  
MINISTRY OF EDUCATION

# Cyber Safety and Digital Security

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Cycle 2 – Grade 6



# Computing, Creative Design and Innovation

Student book

Grade 6

Volume 3

MOE Copyright



1445 - 1446 A.H./2024 - 2025 A.D



# UNIT 3

## Networks and the Internet



## Cyber safety and digital security

When you talk about networks and protocols, it deals with electronic information. When dealing with electronic information it is important to keep your security in mind.

The UAE has very strict laws when it comes to secure electronic information. In this section you will learn how the UAE is protecting its citizens and residents in this field and strengthening digital trust.



## Reporting cybercrimes

You can report cybercrimes online or in person through the following channels:

- ⦿ the eCrime website
- ⦿ Aman service- Abu Dhabi Police
- ⦿ Dubai Police's website or visiting a nearby police station
- ⦿ the 'My Safe Society' app



After registering the complaint, the security forces will take necessary action against the crime. They will do their best to help in solving the crime as soon as possible. They also organise seminars, workshops and conferences to educate people on cybercrimes and providing information on how to deal with it.

### ***UAE Information Assurance (IA) Regulation***

Considering the rapidly evolving cyber threats, Telecommunications and Digital Government Regulatory Authority developed the 'UAE Information Assurance Regulation' to provide protection against cybercrimes and a trusted digital environment throughout the UAE.

### ***Digital wellbeing support line***

UAE also has a digital wellbeing support line that provides professional advice from experts on practical daily situations you can face in the digital world.



### ***Cyber safety***

The UAE is taking several other efforts to maintain and strengthen cyber safety. Some of these efforts are mentioned below.



### ***Salim- an online cybersecurity advisor***

The UAE Computer Emergency Response Team (aeCERT) launched the initiative Salim, an online cybersecurity advisor, with the slogan 'Towards a safe cyber culture'. The goal of this initiative is to spread knowledge about cyber safety to the entire community.

### ***UAE Ambassadors for electronic security***

This initiative from TRA aims to train top UAE students to serve as ambassadors in promoting and spreading cybersecurity awareness across the UAE.

### ***Cyber blackmailing***

In 2016, the Dubai Police's Al Ameen service in cooperation with the UAE's Telecommunications Regulatory Authority (TRA) organised a cyber-blackmail awareness campaign.

### ***Cyber citizenship***

Cyber C3 is designed to produce digitally literate and responsible UAE citizens.

The programme targets students from grades 9 to 12, college and university students, professionals, parents, and family foundations. The UAE cybercrime laws are part of the curriculum to promote the understanding of these laws through local case studies such as:

- ⦿ Top internet safety tips for parents
- ⦿ Cyberbullying
- ⦿ eSecurity and eCommerce
- ⦿ Digital reputation.



## **Activity 9**



## Digital security

The UAE maintains digital security of individuals through the UAE Pass app and Emirates ID.



### The UAE Pass app

The UAE Pass app is the first national digital identity and signature solution that enables users to identify themselves to government service providers in all emirates through a smartphone-based authentication.



### Emirates ID

Federal Authority for Identity and Citizenship (ICA) launched electronic identity cards for the whole population in the country including nationals and residents. The card carries biometric details to verify and confirm the identity of each individual.





### Child Digital Safety

Ministry of Interior and the National Programme for Happiness and Wellbeing launched the 'Child Digital Safety' initiative in March 2018, in a joint effort to raise awareness among children and school students about online threats and challenges to promote safe use of the internet.

The initiative also familiarises parents and educators with solutions they can use to address these challenges and ensure the safety of their children and students. It includes developing educational material on digital safety, facilitating children with global best practices in that domain, and providing advice to parents and teachers to enhance digital safety for their children at home and in the learning environment.



#### Activity 10



#### Activity 11





## Encryption

Ahmed wants to send a message to his friend. He wants his message to be secure and not easily read by other people. He wants to change the message into code words and give the key to code words to his friend.

For example, the message is **"homework completed"** to make it secure he changed it into code words **"krphzrun frpsohwhg"** and gave a key value of +three to his friend.

The process of changing the original message into code words is called **encryption**.

In below table, first word "homework" is changed to "krphzrun"

Plaintext	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
Ciphertext	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c

h	o	m	e	w	o	r	k
↓	↓	↓	↓	↓	↓	↓	↓
k	r	p	h	z	r	u	n

And the second word "completed" is changed to "frpsohwhg" in the below table.

Plaintext	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
Ciphertext	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c

c	o	m	p	l	e	t	e	d
↓	↓	↓	↓	↓	↓	↓	↓	↓
f	r	p	s	o	h	w	h	g

Ahmed will send the encrypted message **"krphzrun frpsohwhg"** to his friend and provide him with a key. His friend will decode this message using the key to know the original message. This process is called **decryption**. It is the reverse process of encryption.

Encrypted message "krphzrun" will be decrypted.

Ciphertext	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c
Plaintext	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

k	r	p	h	z	r	u	n
↓	↓	↓	↓	↓	↓	↓	↓
h	o	m	e	w	o	r	k

Encrypted message "frpsohwhg" will be decrypted.

Ciphertext	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c
Plaintext	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

f	r	p	s	o	h	w	h	g
↓	↓	↓	↓	↓	↓	↓	↓	↓
c	o	m	p	l	e	t	e	d

To summarise, Ahmed will encrypt his message and share the encrypted message "krphzrun frpsohwhg" along with the key value with his friend. His friend will use the key value to decrypt it to know the original message "homework completed" sent by Ahmed.



**Encryption** is the process of encoding data or a message so that it cannot be understood by anyone other than its receiver.

The data or message is encrypted using different encryption techniques. The opposite of encryption is **decryption**.



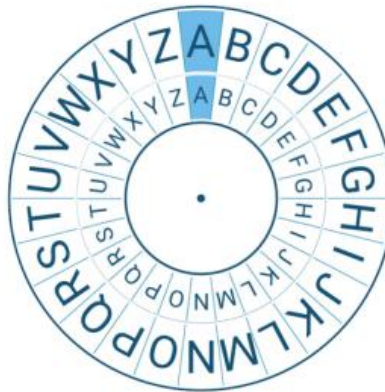
### *Encryption advantages and disadvantages*

Encryption helps to protect data online. One advantage is that messages are more secure. On the other side the disadvantage is that it takes longer for messages to be sent and received.

### *The Caesar cipher*

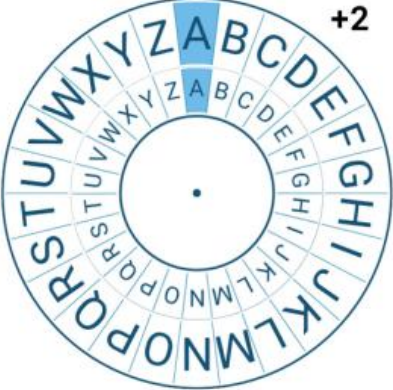
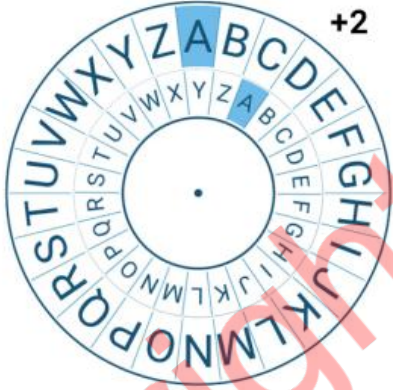


A cipher is a type of secret code, where you swap the letters around so that no one can read your message.

A Caesar cipher is one of the oldest and most famous ciphers.



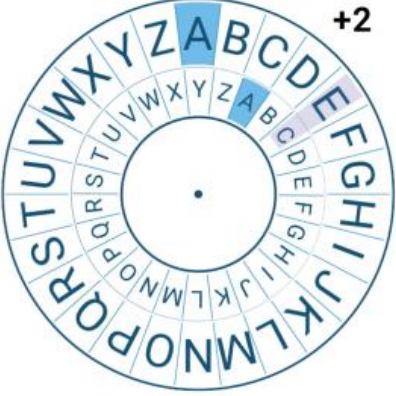
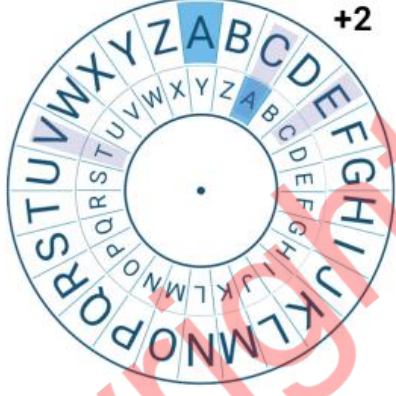


A Caesar cipher uses a key. A key is used to lock and unlock the message. The message cannot be read without the key.

	
<p>In this example, the key is +2. The above picture is without moving the wheel</p>	<p>This means that the inner wheel moves two letters to the right.</p>
	
<p>The inner wheel becomes the original message.</p>	<p>The outer wheel is used for the encrypted message.</p>



Let's try another example, to encrypt the word CAT you start by finding C on the inner wheel and looking at the outer wheel for the encrypted letter. Remember for this example the key is +2.

										
C becomes E.	You continue for each letter until you have finished the encryption.									
<table style="width: 100%; text-align: center;"> <tbody> <tr> <td>C</td> <td>A</td> <td>T</td> </tr> <tr> <td>↓</td> <td>↓</td> <td>↓</td> </tr> <tr> <td>E</td> <td>C</td> <td>V</td> </tr> </tbody> </table>		C	A	T	↓	↓	↓	E	C	V
C	A	T								
↓	↓	↓								
E	C	V								



### Activity 12



### Activity 13



### Activity 14



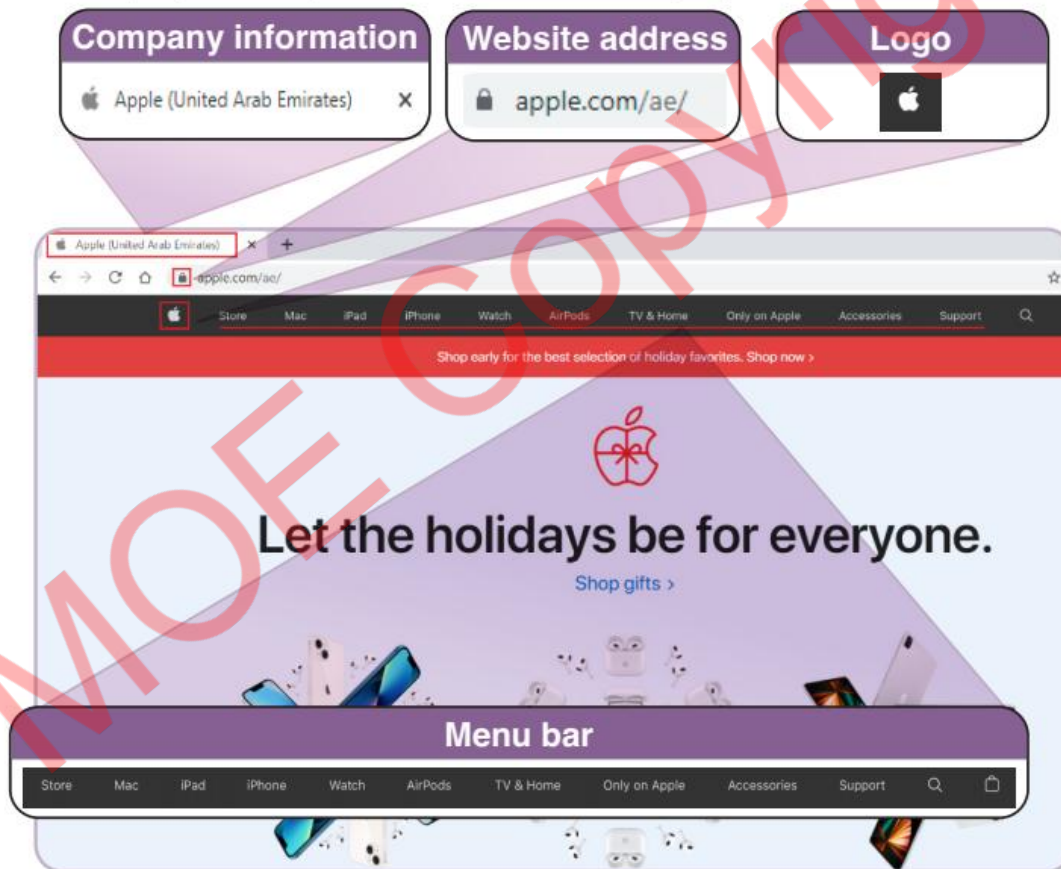
## Using websites for research

When carrying out online research, it is important to be able to recognise which websites are reliable and which are not.

There are many websites on the internet you cannot trust. Look at the tips below. They will help you decide which websites to use for research.

### Design

A reliable website will look organised. It will have a clear logo, menu bar, name of the company and may also include some company information.



You can also look for addition security information to check website is secure or not.

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### Website security information

← Security apple.com ×

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🔒 Connection is secure  
Your information (for example, passwords or credit card numbers) is private when it is sent to this site. [Learn more](#)

📄 Certificate is valid Issued to: Apple Inc. [US] 🗑️

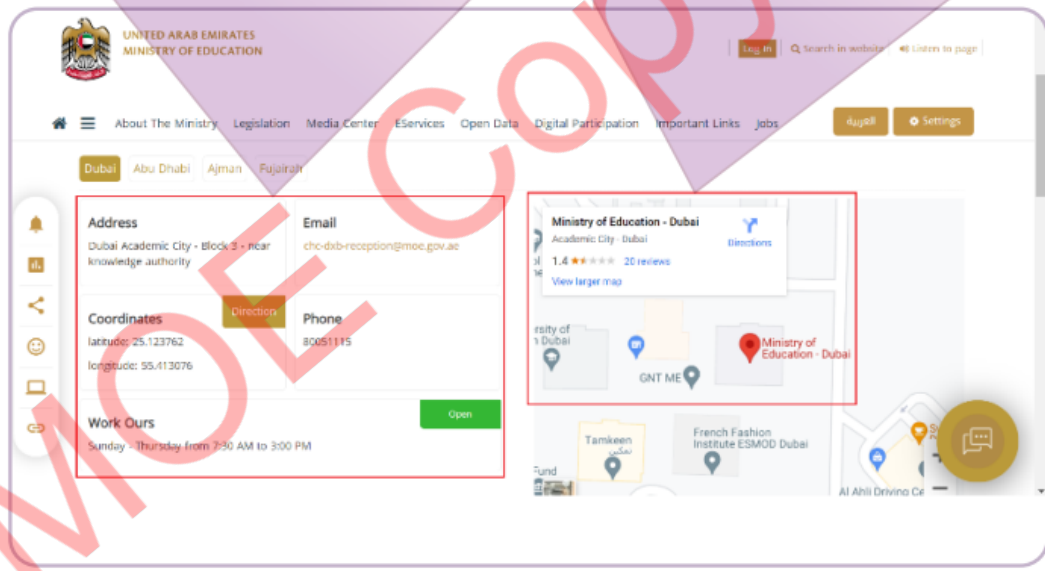
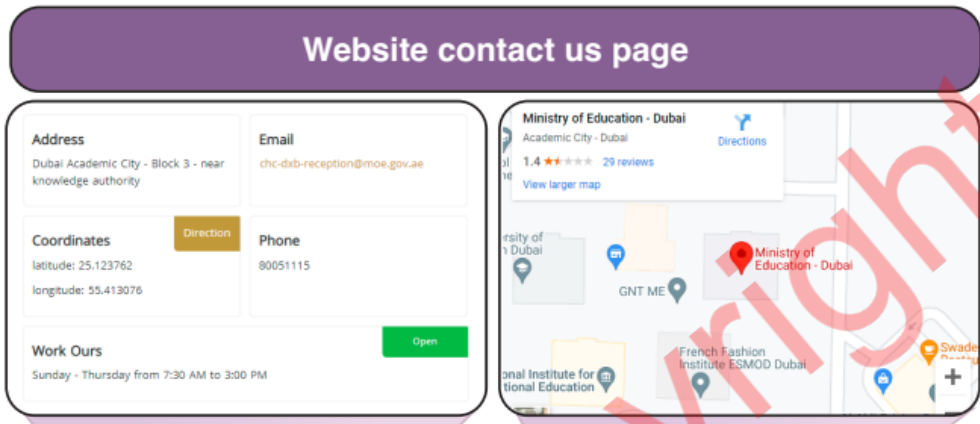
The screenshot shows the Apple website (apple.com/ae/) with a security information popup overlaid on the left. The popup contains the following text: "Security apple.com", "Connection is secure: Your information (for example, passwords or credit card numbers) is private when it is sent to this site. Learn more", and "Certificate is valid Issued to: Apple Inc. [US]". The website background features a red banner with the text "early for the best selection of holiday favorites. Shop now >". Below the banner is the Apple logo with a gift tag, followed by the headline "Let the holidays be for everyone." and a "Shop gifts >" button. The main content area displays three groups of holiday-themed products: iPhones, AirPods, and iPads.

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### Know the author

The 'contact us' page shows the name of the company, their contact details and even their location.



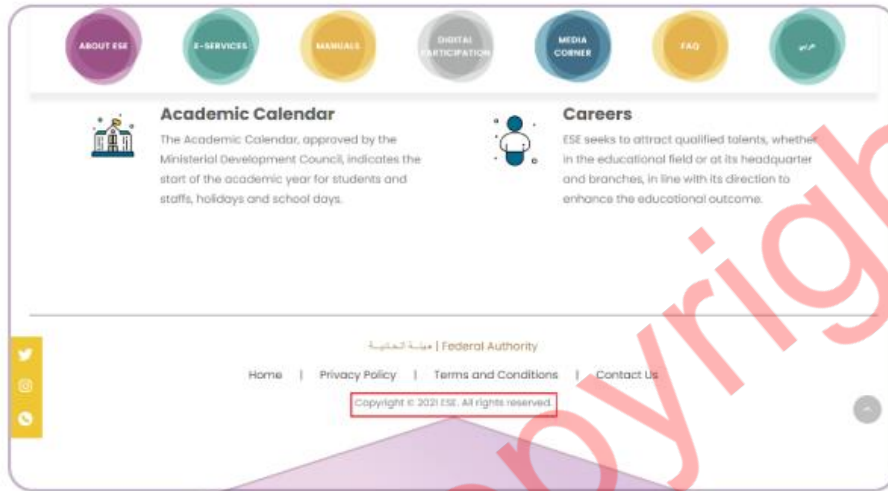
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## Information

A copyright © symbol and the date the website was last updated is displayed at the bottom.

Tip: Look out for poor spelling and grammar on the website!



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## URL (website address)

Secure websites start with <https://> a different colour to differentiate it from the full stop at the end of the sentence.

The website address is usually short and brief. It should have the company name or initials in the address.

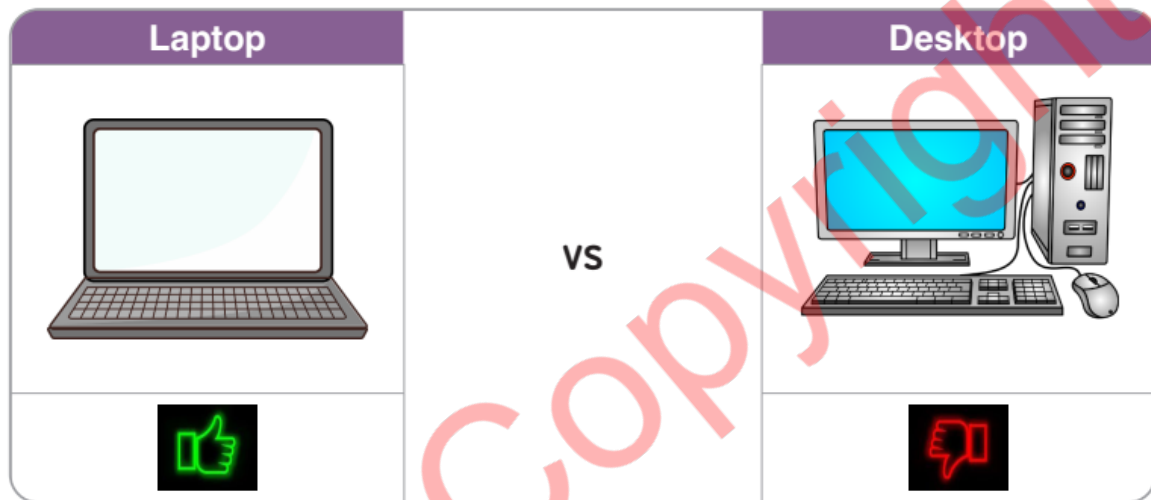


## Activity 15



## Biased websites

Ahmed is reading online news. He comes across a webpage which talks about laptops and computers. The website is more focussed towards mentioning laptops and they are showing that laptops are always better than a desktop computer. The online article has not discussed the advantages of desktop computer but clearly shows the advantages of laptop. It also mentions that most people use laptops without showing the facts.



Once you have verified that your source of information is reliable, you need to look at the information from the other angle that it is not bias or giving wrong impressions. For example, imagine you are researching for a project, and you found the website which is reliable but after reading the content you feel it is favouring a particular topic or thing.



## What is Bias?

Bias is unfairness in favour of or against one thing, person or group compared with another, usually in a way considered to be unfair.

Identifying bias can be tricky because it is not clearly stated. Bias can exist on a range of misinformation, and more. All sources need to be evaluated for potential bias.



## Find the source

To avoid bias sources for research, ask yourself the following questions:

- ⦿ Who owns/produces the source?
- ⦿ Who advertises in the source? Are the advertisements appropriate for the source?
- ⦿ Does the content contain all the facts or at least present both sides of an argument fairly?
- ⦿ What type of language is used? Does the author use strong language?
- ⦿ Do they back up the article with factual evidence? Can you see where they got their evidence through links or citations?

To find the answer to these questions, you need to read the text carefully and you may have to do some background/fact-checking research to help determine if the source is reliable or biased.

### **Biased information**

If you notice the following while researching on a website, the source may be biased:

- ⦿ Heavily opinionated or one-sided
- ⦿ Relies on unsupported or unsubstantiated claims
- ⦿ Presents highly selected facts that lean to a certain outcome
- ⦿ Pretends to present facts, but offers only opinion
- ⦿ Uses extreme or inappropriate language
- ⦿ The author is unidentifiable, lacks expertise, or writes on unrelated topics
- ⦿ Tries to sell you something in disguise



### **Types of Bias**

- ⦿ Commercial

Example: fake news. Advertisers try to make money by sponsoring content.



- ⦿ Visual



Example: images are powerful. Look at how the image portrays the subject.



### Activity 16



### Activity 17





# Computing, Creative Design and Innovation

Activity book

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## Cyber safety and digital security



### Activity 9



Fatima used her credit card for online shopping. Her card was saved on the website she used for online shopping. A few days later she received a message from her bank that her card is used for AED 2,000 in another country.

Based on above information, answer the following questions to help Fatima.

What are the steps that Fatima can take to handle this situation?

How and where can she report such incident?

Do you think she should report the website to authorities and what actions can she take against the website company she used for shopping?





## Activity 10



Ahmed received a phone call regarding winning a prize. The caller asked him to share his information such as.

- Name
- Age
- Address
- Bank account details
- Credit card details
- Emirates ID details



Based on above information, answer the following questions to help Ahmed so he can decide whether to share his information with the caller or not.

Do you think it is a real phone call? Please explain your answer.



Do you think Ahmed can share above requested information with the caller? Please explain your answer.



What do you think Ahmed needs to do in this situation?

How and where can he report such an incident?





## Activity 11



Match the following with the correct description.

Cyber safety	Description
UAE Information Assurance (IA) Regulation	This initiative from TRA aims to train top UAE students in promoting and spreading cybersecurity awareness across the UAE.
digital wellbeing support line	enables users to identify themselves to government service providers in all emirates through a smartphone-based authentication.
Salim	to provide protection against cybercrimes and a trusted digital environment throughout the UAE.
UAE Ambassadors for electronic security	online cybersecurity advisor, with the slogan 'Towards a safe cyber culture'
UAE pass app	provides professional advice from experts on practical daily situations you can face in the digital world.



### Encryption

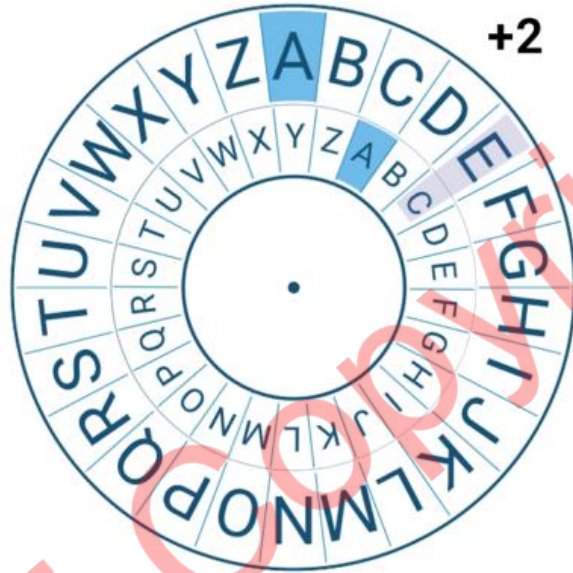


## Activity 12

Theory



Using the cipher wheel encrypt your name. Remember the key is +2 for name encryption. Write your encrypted name in the space provided below.



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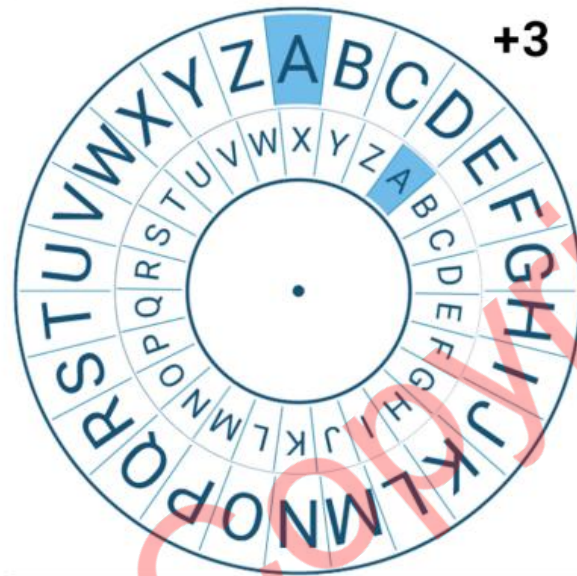
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## Activity 13



Using the cipher wheel decode encrypted message given below. Remember the key is +3 for message encryption. Write your answer in the space provided below.



Encrypted message: **F r p s x w h u v d u h i x q**





## Activity 14

Theory



Research on the internet and find out what kind of encryption is used in messaging services such as WhatsApp and Telegram. Write your answer in the space provided below.

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## Using websites for research



### Activity 15



Scan the QR code below and go through the website. What do you think about the website write your answers in the space provided below?



How is the design of the website you visited? Will you use it for online research? If no, then please state why?

Are you able to find out about the authors of the website? Does it have a contact us page?

What kind of information is presented on this website?

Does this website address have a secure connection? Check for additional security information of this website. Write full website address in the space below



### Biased websites



## Activity 16



Fatima is researching for a project on Mars. Help Fatima in identifying the information shared in the article below is biased or unbiased.



- S
- T
- R
- E
- A
- M

Identify biased information in the picture and write your answers in the space provided below

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## Activity 17

Theory



Research on the internet to find information about self-driving cars. Mention one website source which is reliable and one website source which is biased and why.

Reliable source

Why the source is reliable?

Biased source

Why is the source biased?





MOEUAOfficial