

Web bots

Student exercises and trainings

Training Kit



CyberEco

مقاومة الدعم السلامة الرقمية
Together to support digital safety



High School



الوكالة الوطنية للأمن السيبراني
National Cyber Security Agency

Web bots

Student exercises and trainings

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December, 2023

Doha, Qatar

This content is produced by the team of
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Dear Student,

This booklet is specifically for you, and you must have it with you when you attend training sessions. Your trainer will guide you on how to use it. This booklet contains a collection of fun and useful exercises, which you will answer either during class or at home.

The booklet also contains a set of educational competitions and cards, as well as general information in which you will find useful and enjoyable. Your trainer will guide you on how to deal with these competitions, and at the beginning of each exercise or competition, we will provide you with general instructions on how to answer.

Dear Student's Parents,

This booklet is specifically for the student and will accompany them during the training they will receive at school. It contains a collection of exercises, training activities, competitions, training games, and training cards, all of which revolve around concepts related to web bots and understanding their operational mechanisms.

The purpose of this booklet and its included mental exercises and activities is to reinforce and solidify the information that the student receives during the training session with the primary goal of enhancing the student's ability to use the internet and technology effectively and safely.

All the exercises and training in the booklet will be accompanied by general instructions on how to answer them. As for the training competitions, the trainer will provide guidance on how to solve them. The booklet also includes some non-classroom exercises, which the student will answer at home. These exercises will also be accompanied by trainer for the solving.

We kindly request your indirect supervision as the student interacts with this booklet. If the student has any question or inquiry about any of the exercises or training activities, please read the specific instructions for each exercise and provide assistance to student in light of these instructions.



First:
In-Class Exercises

Knowledge 1

1. Explain how the following
processes work:

1. Transpiration is the process by which water is lost from the leaves of a plant.

2. Photosynthesis is the process by which plants use light energy to produce glucose and oxygen from carbon dioxide and water.

3. Respiration is the process by which plants use glucose and oxygen to produce carbon dioxide and water, releasing energy.

4. The greenhouse effect is the process by which the sun's rays are absorbed by the earth's surface and re-emitted as heat, which is then trapped by the atmosphere.

5. Global warming is the process by which the average temperature of the earth's surface is increasing due to the greenhouse effect.





1. The first step is to identify the problem or goal.

2. Next, you need to gather relevant information.

3. Then, you should analyze the data and identify patterns.

4. Finally, you can develop a solution or recommendation.

Step 1: Identify the problem or goal.





Pay attention!

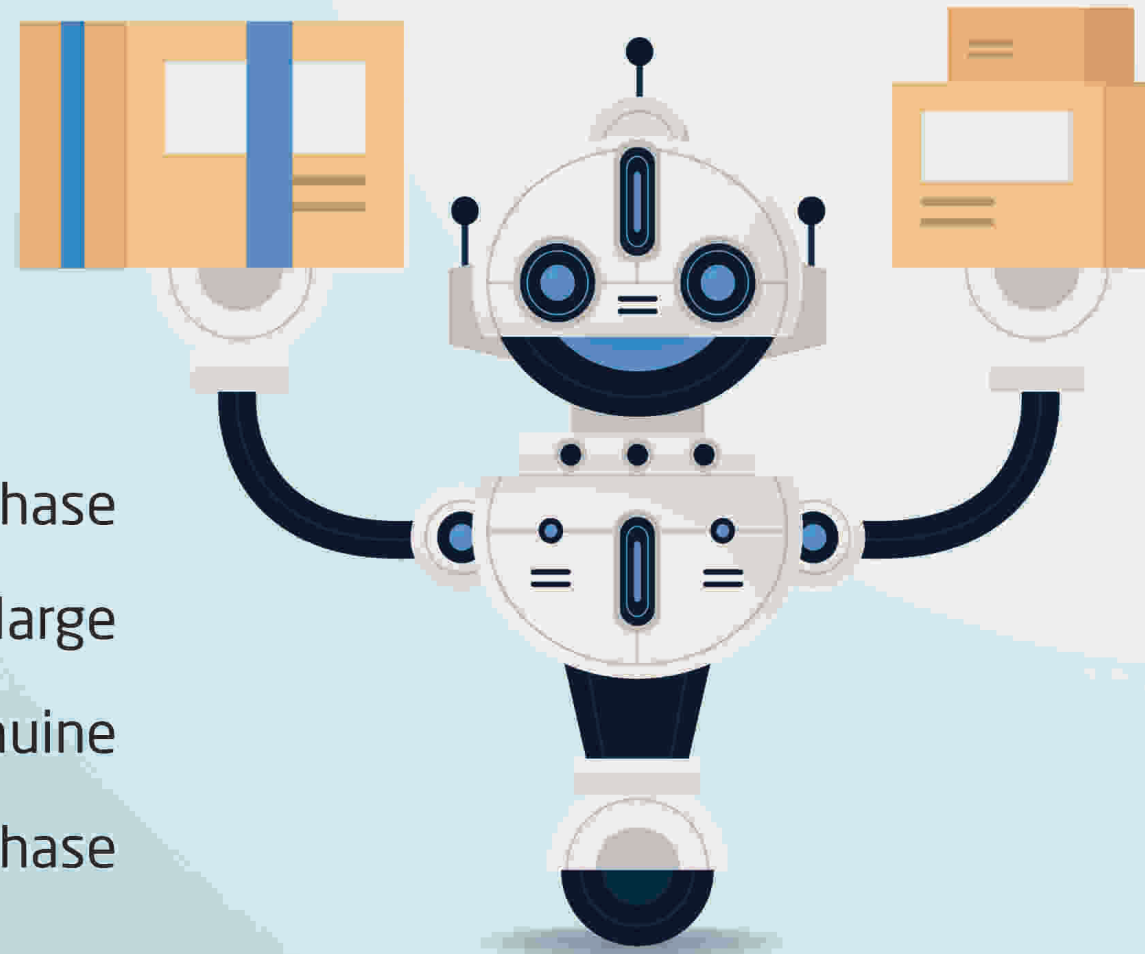
Malicious bots

They are internet-connected devices, each of which runs one or more bots, often without the knowledge of the device owners.

Since each device has its own IP address, botnet traffic comes from multiple IP addresses, making it difficult to identify the source of malicious bot traffic and block it.

Did you know that...?

Exploitative bots are designed to purchase fast-moving products or services in large quantities, making it difficult for genuine customers to complete legitimate purchase transactions.



Exercise 2:

Choose the correct word or phrase from the words or phrases provided within parentheses:

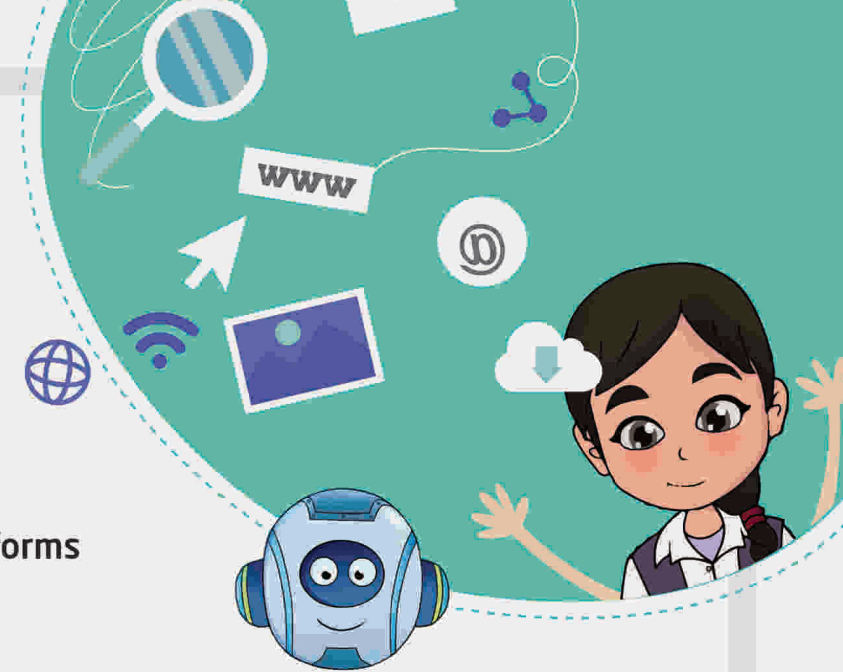
1. A bot is an abbreviation of the word robot, and it is a program that performs tasks (automatically ☒ manually ☐).

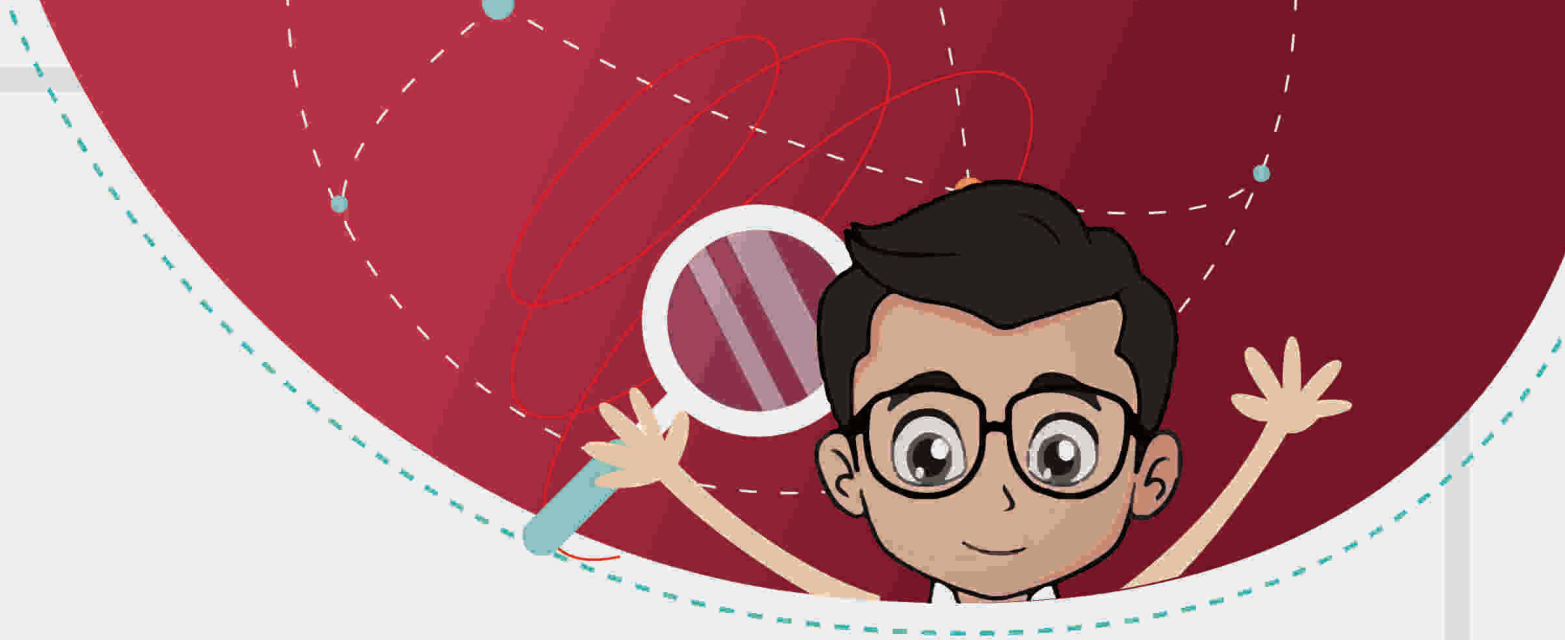
2. Web bots perform tasks (repeatedly ☐ once only ☐).

3. Web bots are considered to be (as fast as humans ☐ faster than humans ☐).

4. Web bots can perform tasks that are (useful ☐ unimportant ☐).

5. The most important tasks performed by bots are (customer service and search engine indexing ☐ securing personal accounts for users ☐).





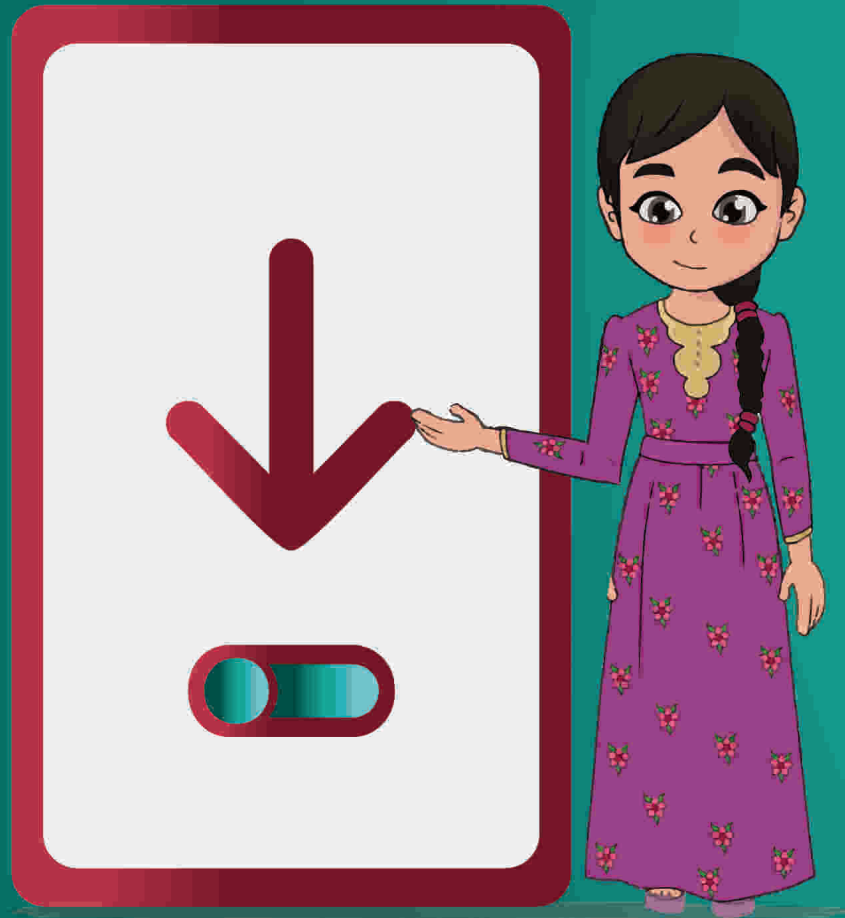
6. Web bots can be malware if they (lose control ☐ take full control of the user's computer ☐).

7. Computer bots are considered to be (digital tools ☐ security programs ☐).

8. Sometimes, bots are misused and exploited to attack (websites ☐ personal accounts ☐).

9. Web bots can (mimic ☐ control ☐) human behavior.

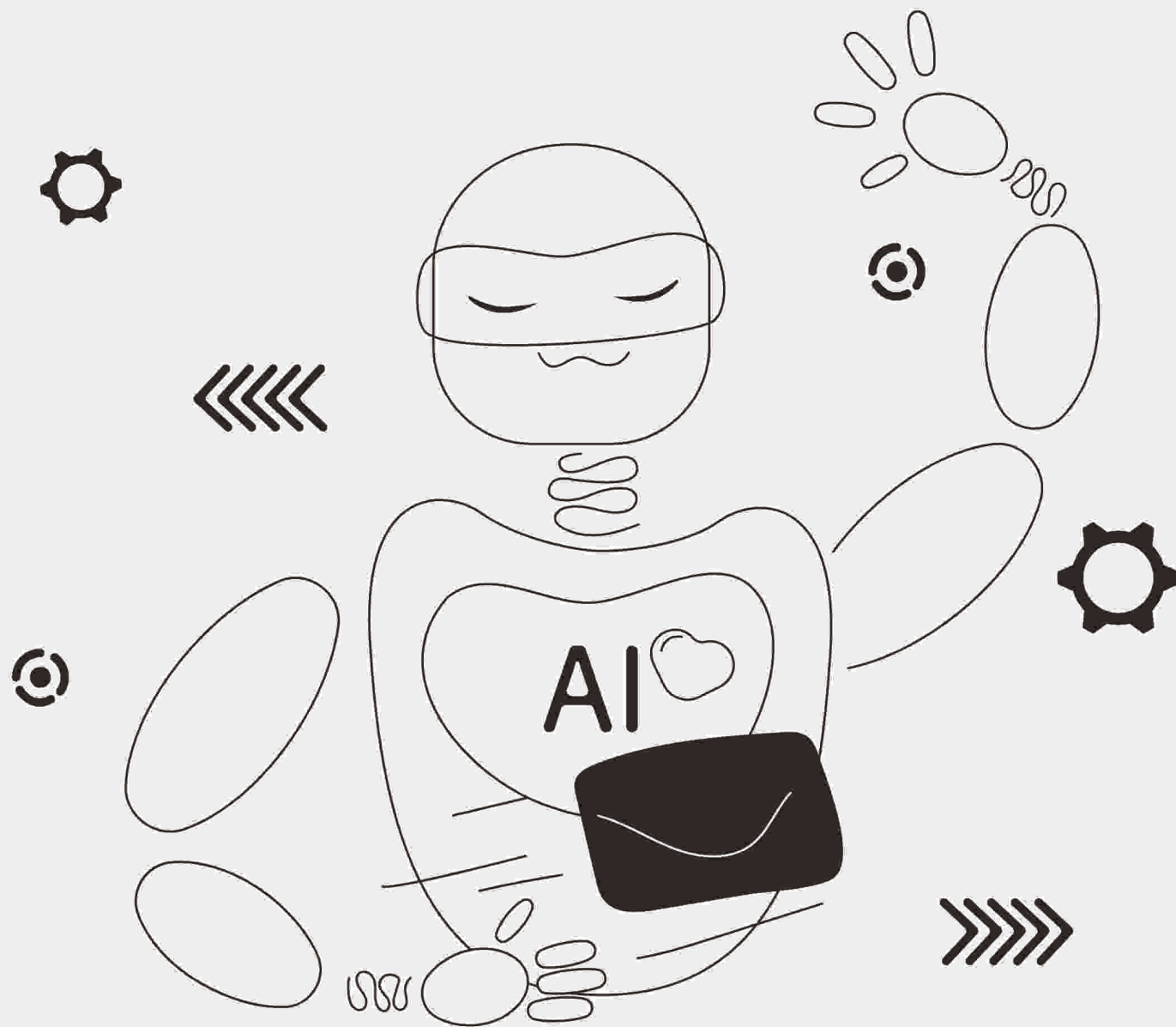
10. Malicious bots can (promote ☐ disrupt ☐) businesses and attack websites.



Pay attention!

Downloads

One of the most common ways that bots infect a user's computer, phone and table. This is done by receiving malware in download format through social media or email messages that advise you to click on a link. The link is often in the form of an image or video, and contains either viruses or other malware.



Summa II:

Werte richtig  oder falsch  beantwortet die richtige Antwort



1. Welche der folgenden Aussagen sind richtig oder falsch? Beantworte die Aussagen.



2. Welche der folgenden Aussagen sind richtig oder falsch?



3. Welche der folgenden Aussagen sind richtig oder falsch? Beantworte die Aussagen.

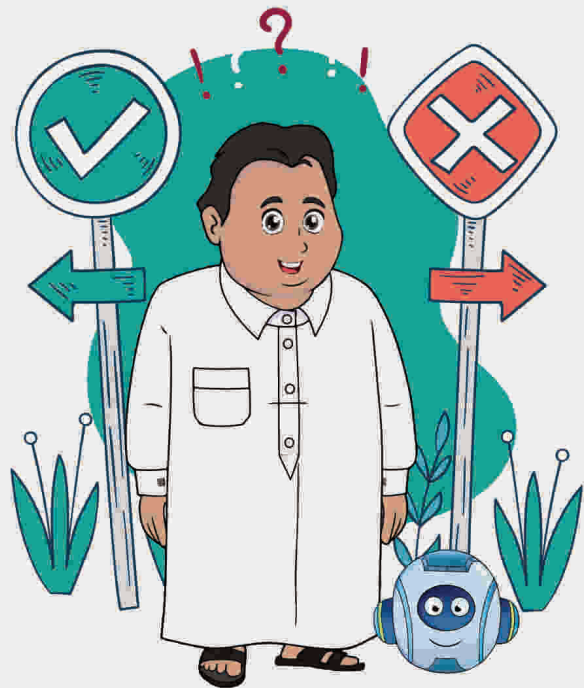


4. Welche der folgenden Aussagen sind richtig oder falsch?



5. Welche der folgenden Aussagen sind richtig oder falsch? Beantworte die Aussagen.





6

Web bots are incapable of engaging in any harmful activities.

☐

7

Occasionally, web bots target only certain small websites.

☐

8

Web bots are exclusively used by companies.

☐

9

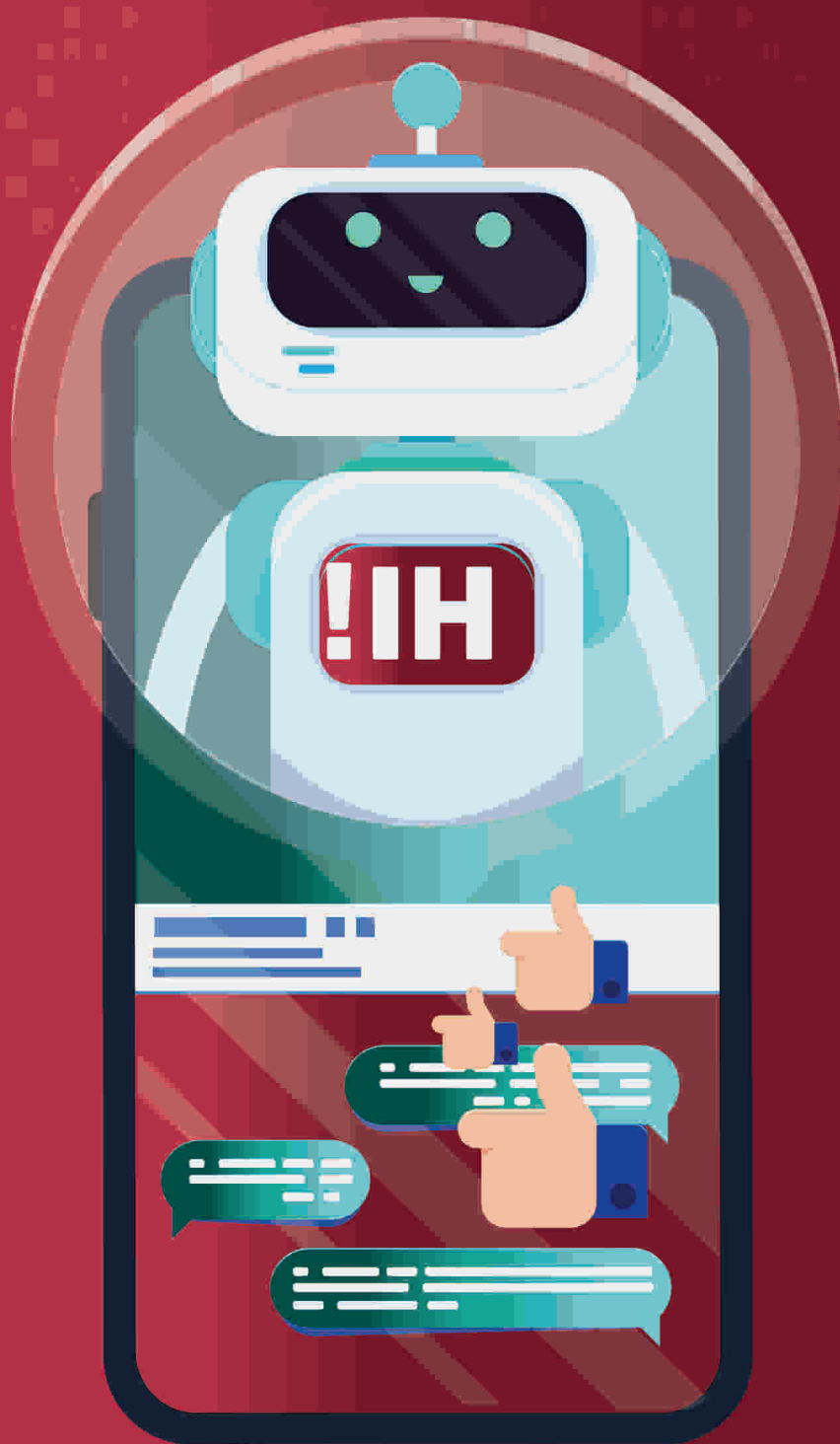
Web bots contribute to only 1% of the daily operations of the internet.

☐

10

Web bots are considered the primary drivers of search engine optimization.

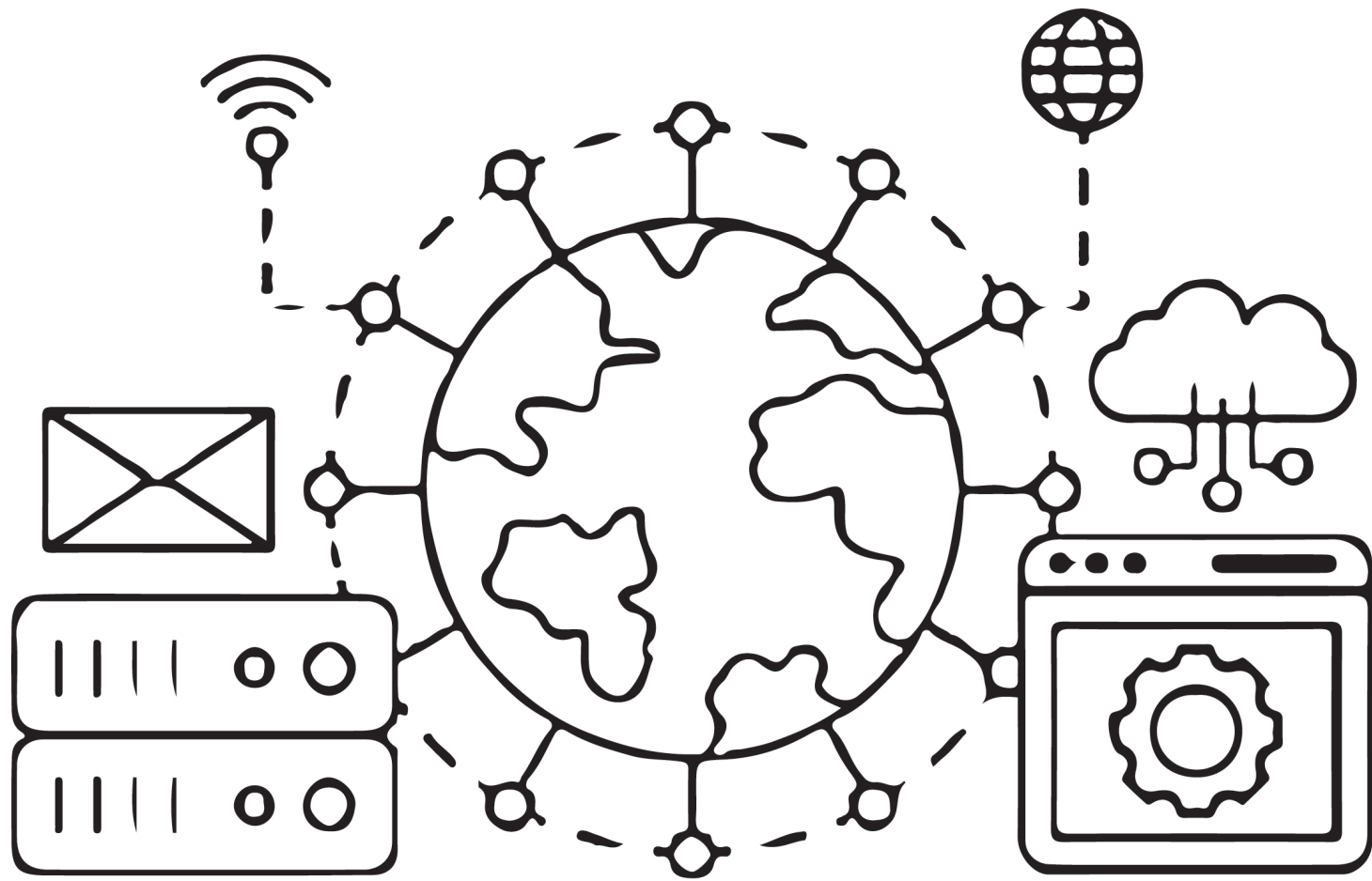
☐



Pay attention!

Chatbots

It is a bot designed to participate in conversations with users, typically through text or voice interfaces, using technologies such as Natural Language Processing (NLP) and Artificial Intelligence (AI) to understand user queries and provide relevant responses.








Exercises

Under the direction of
our type typography
introducing new ideas

Instruction

Students get into five small groups, each with one
member of the group placed on a table, and the rest
of the group sitting around the table. At the end of
the 10 minutes, the group is
presented with

	These are the main features of the new software. It is a very powerful program for the computer.	Challenge
	There are many other features of the software which are not mentioned in the automated message. Do you think these are important features or not?	
	The main features of the software are listed in the automated message and are not important. Do you think these are important features or not?	
	The main features of the software are listed in the automated message and are not important. Do you think these are important features or not?	
	The main features of the software are listed in the automated message and are not important. Do you think these are important features or not?	

The first step in the process of developing a business plan is to conduct a market analysis. This involves researching the market for your business, identifying your target market, and understanding the needs and preferences of your customers.

The second step is to develop a business model. This involves determining how your business will generate revenue and how it will manage its costs.

The third step is to create a marketing plan. This involves developing strategies for promoting your business and reaching your target market.

The fourth step is to develop a financial plan. This involves determining the financial requirements of your business and how you will manage its finances.

The final step is to write the business plan. This involves putting all of the information you have gathered together into a coherent and professional document.

Pay attention!

Task automation bots

It is a type of bots concentrates on automating repetitive tasks, data processing, and other routine activities that could consume a significant amount of time for humans.



Did you know that...?

Credential stuffing bots can gain access to user accounts by launching attacks that involve utilizing stolen usernames and passwords or infiltrating user accounts.



1. Introduction

Introduction

2. The Role of the Teacher

The Role of the Teacher

3. The Role of the Student

The Role of the Student

4. The Role of the Parent

The Role of the Parent

5. The Role of the Community

The Role of the Community

6. The Role of the Government

The Role of the Government

7. The Role of the Media

The Role of the Media

8. The Role of the Church

The Role of the Church

9. The Role of the Family

The Role of the Family

10. The Role of the Society

The Role of the Society

11. The Role of the Culture

The Role of the Culture

Unit 1: Introduction to the course

Unit 1: Introduction to the course

1. Introduction to the course	
2. The course structure	
3. The course objectives	
4. The course content	
5. The course assessment	
6. The course materials	
7. The course schedule	
8. The course contact information	



Pay attention! **Search engine bots**

It is a type of beneficial bots, also known as web crawlers, these bots are used by popular search engines like Google, Yahoo, and Bing to crawl the internet and find the information needed by users.

Exercise 6:

The following sentences
are incorrect...

Identify the errors
and then correct them:

Instruction:

Read the sentences below
carefully, identify the error
in each sentence, and
correct it. An example is
provided in the table.

Web bots cannot communicate with each other.

web bots can communicate with each other.

Algorithms are a non-essential part of bots and do not have significant importance.

Chatbots operate automatically without specific pre-defined commands.

Bots cannot learn from humans.

Bots do not use artificial intelligence technologies.





Auto Click



Pay attention! **Clickbots**

Clickbots can automatically click on links present on websites, resulting in the generation of a substantial volume of traffic. Consequently, this deceives advertisers through artificial user clicks, misleading search engine rankings.

Exercise 1:
Classify the following sentences as either disadvantages or advantages of bots:

Instruction

Carefully read the sentences below, and determine whether they express advantages or disadvantages of bots.

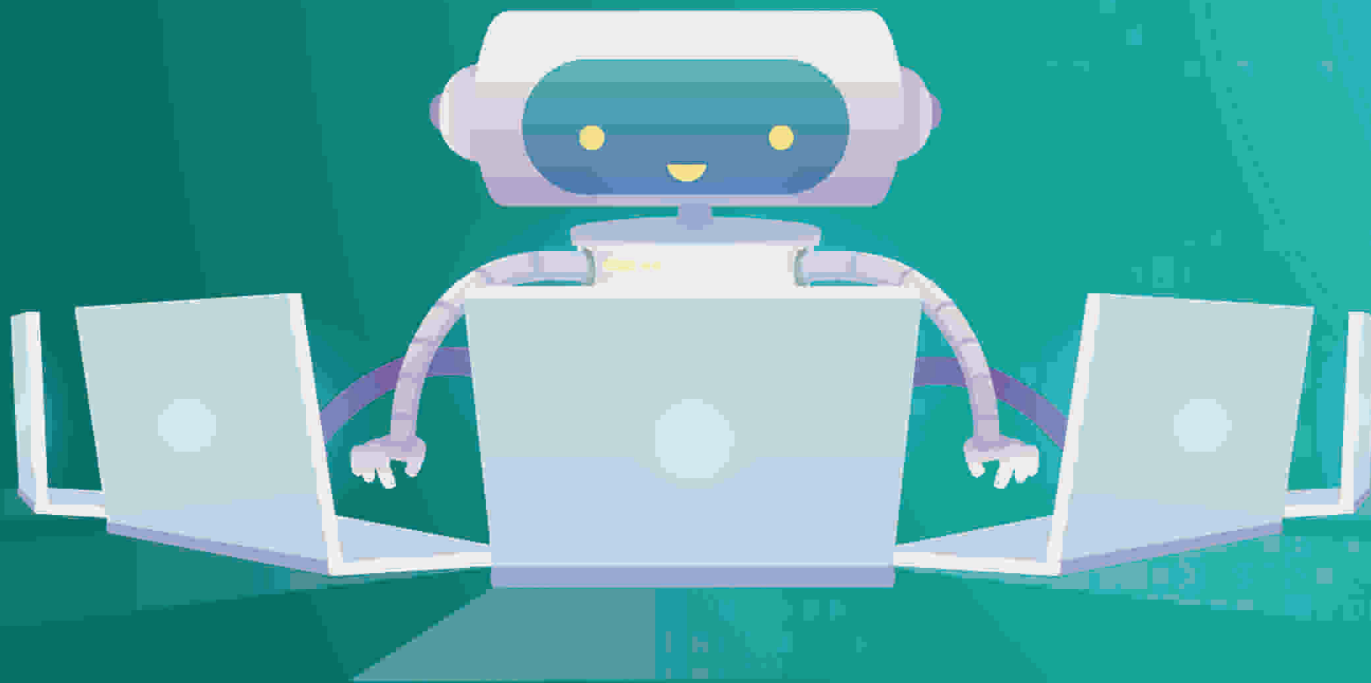
An example is provided below.

1. Faster than humans, especially in repetitive and patterned tasks.	Beneficial
2. Saves time for customers and clients.	
3. Reduces labour costs for companies.	
4. Its programming may be malicious.	
5. They are not capable of performing all tasks, and ignorance of them may lead to risks.	
6. Available 24/7.	
7. It can be used in spam.	
8. Enables companies to reach a wider audience through messaging applications.	
9. Customizable.	
10. It cannot function without human management intervention on occasion.	
11. Multipurpose.	
12. It can enhance the user experience.	

Pay attention!

Data collectors

These are bots designed to gather information from various sources and create comprehensive directories or content lists. These bots collect and update data to provide users with up-to-date information about websites, companies, products, or services.



Exercise 2:

Arrange the following steps in the event that your computer is infected with a bot virus:



Instruction

Read the sentences below carefully, and identify the sentence that indicates the first step in the event of infection with a bot virus, and the second, and the third, and so on until the end of the sentences.

1	Transfer all important or personal data to another device or an external hard drive.	
2	Secure the computer using various security tools or seek the assistance of a professional to do so.	
3	Disconnect the computer from the network as quickly as possible to prevent data and information theft.	
4	Restore your device to factory settings, and this will resolve the issue, though unfortunately, all files on your device will be deleted.	



Exercise 3:

Mark True or False in front of the following phrases, correcting them if they are false:

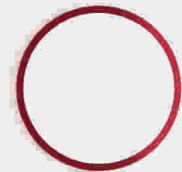
1

You cannot, under any circumstances, fully protect your device 2.



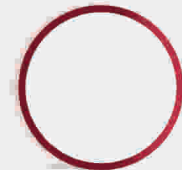
2

Installing anti-malware software helps protect your device from bot attacks.



3

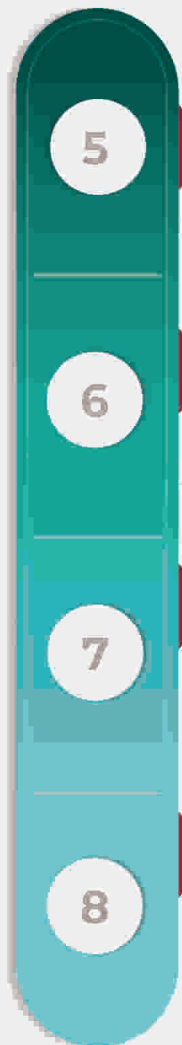
Neglecting software updates has no impact whatsoever.



4

Using strong passwords can help to prevent many security problems.





5

You can click on links on the internet without fear.



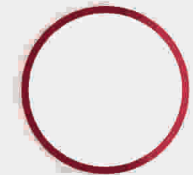
6

There are no unreliable websites or ads.



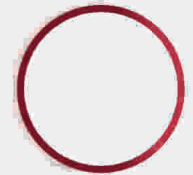
7

It is important to install a firewall to help block malicious attacks.



8

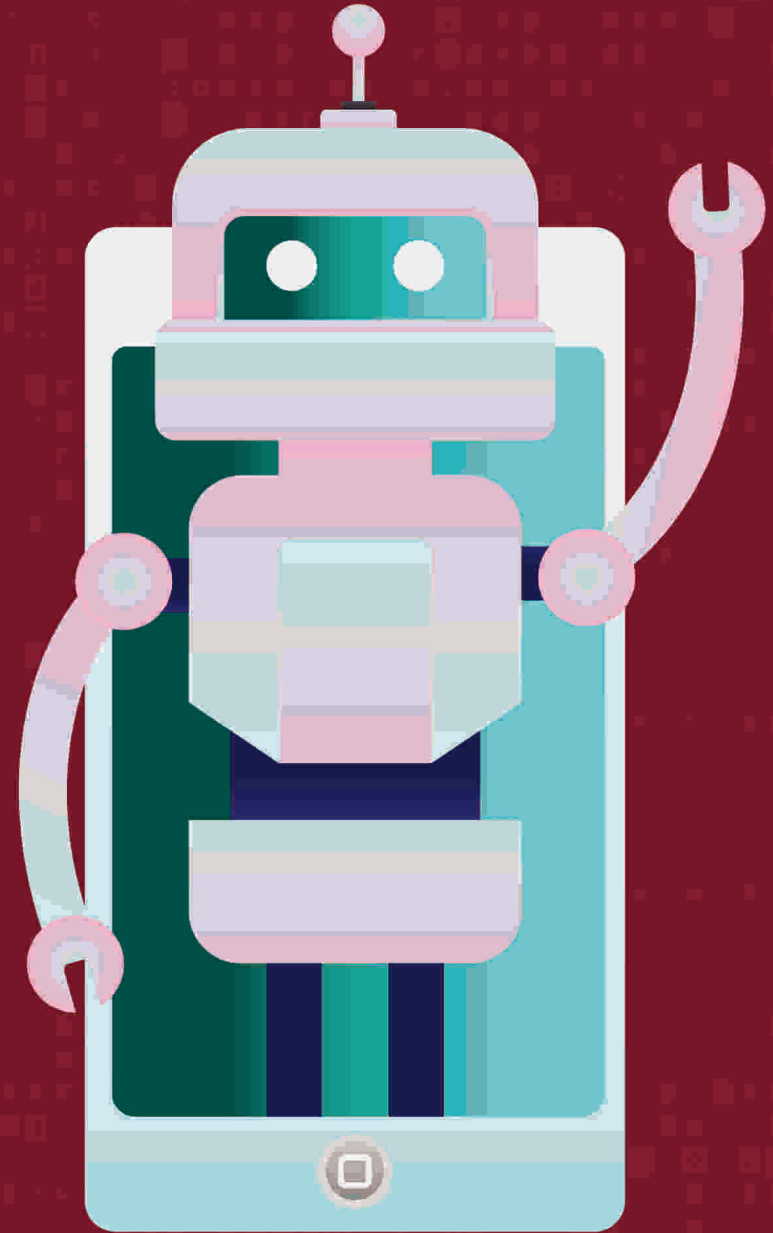
Using a bot manager does not affect malicious bots.



Pay attention!

Bot Attack

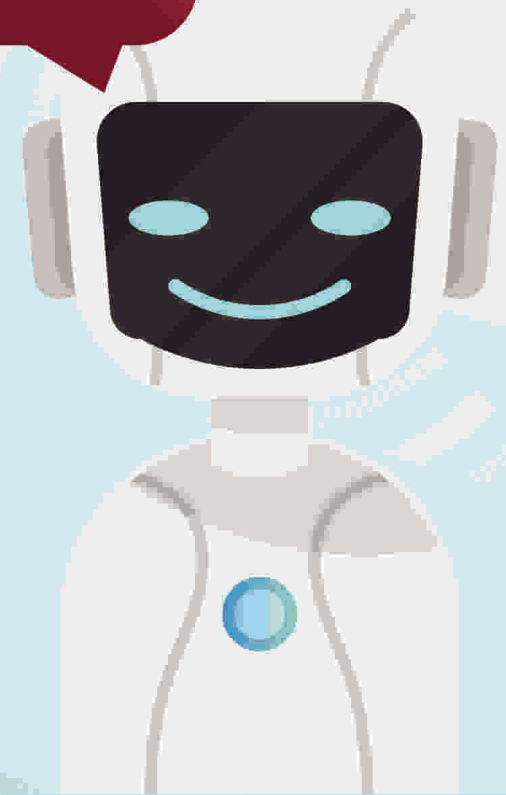
It is a type of cyber-attack that employs automated scripts to disrupt a website, steal data, carry out fraudulent purchase transactions, or perform other malicious activities. These attacks can be deployed against various targets, such as websites, servers, and applications. The purpose of these attacks varies, but they often involve stealing sensitive information or causing damage to the target's infrastructure or damage to reputation.



Did you know that...?

"web crawling programs" bots are used to crawl the internet and find information needed by the users.

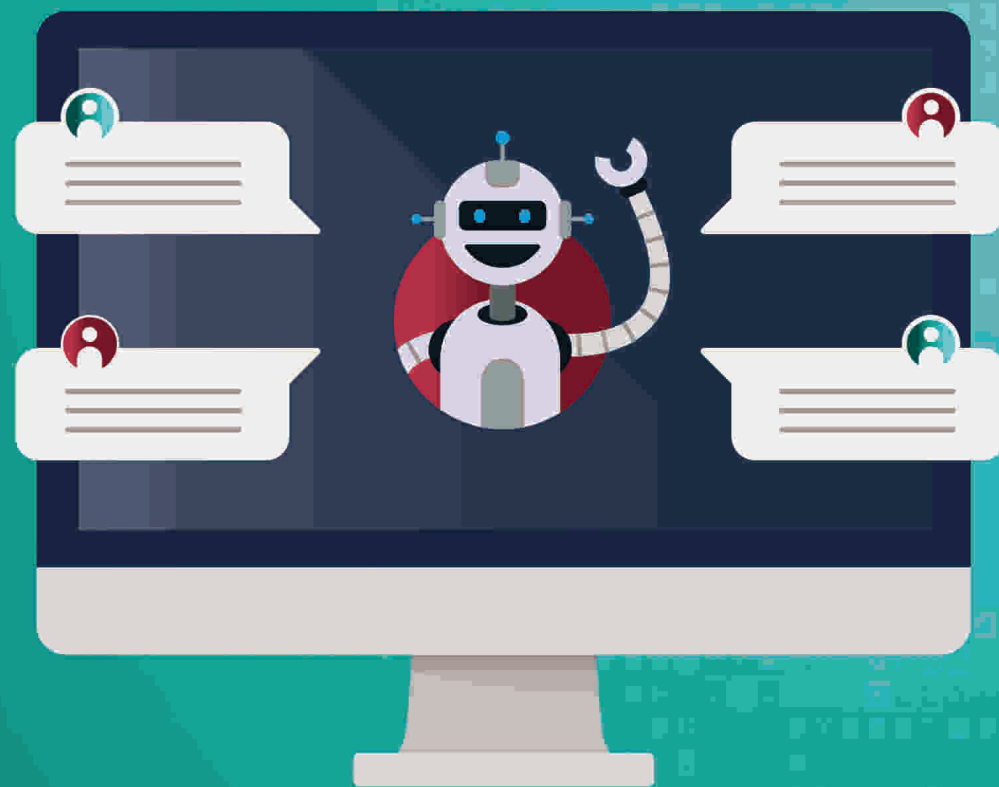
HELLO



Pay attention!

Web/content scraping

Content or web scraping, involves the automated downloading of a substantial portion or all of the content from a website, irrespective of the website owner's preferences, by automated bots. Content extraction bots are often used to repurpose content for malicious purposes, such as content duplication to enhance search engine rankings on websites owned by the attacker, violation of copyright, and theft of organic traffic.



Exercise 4:

Extract the following words from the table.:

Instruction

Read the words below carefully and search the table for consecutive letters that form these words. Below is an example of the word '**bots**' and how to find its letters in the table:

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

Bots - Automated - Fast - User - Social - Global - Malicious - Beneficial - Repetitive - Digital
Messages - Website - Search engines - Companies - Individuals

Pay attention!

Communication scraping

A type of malicious bot that scans websites to find contact information such as phone numbers and email addresses, and then downloading that information. Bots specializing in email scraping are considered a type of web scraping software that specifically targets email addresses, usually with the aim of discovering new targets for spam emails.



Did you know that...?

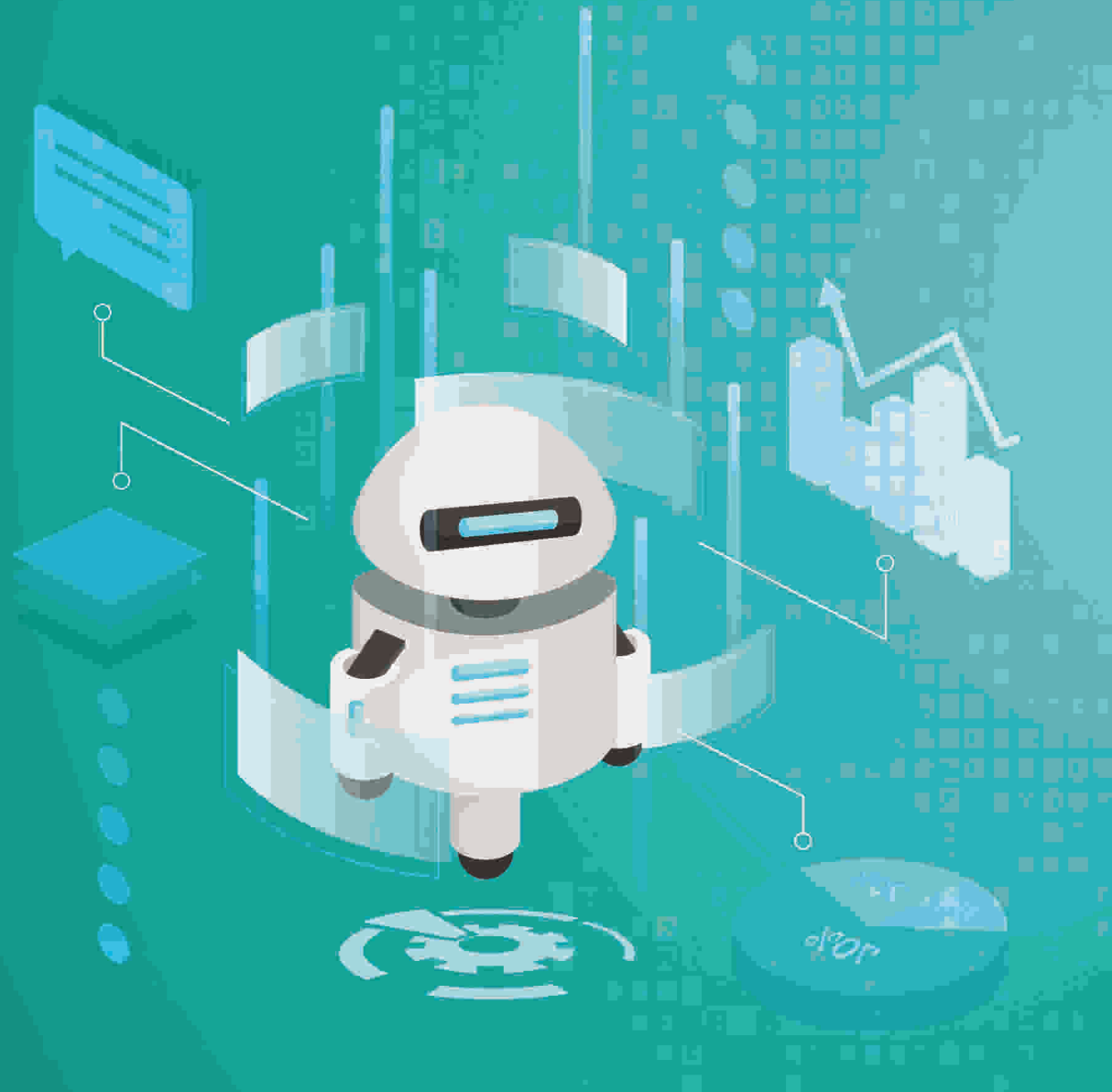
Slow internet speed is considered a sign of devices and files being infected by botnets

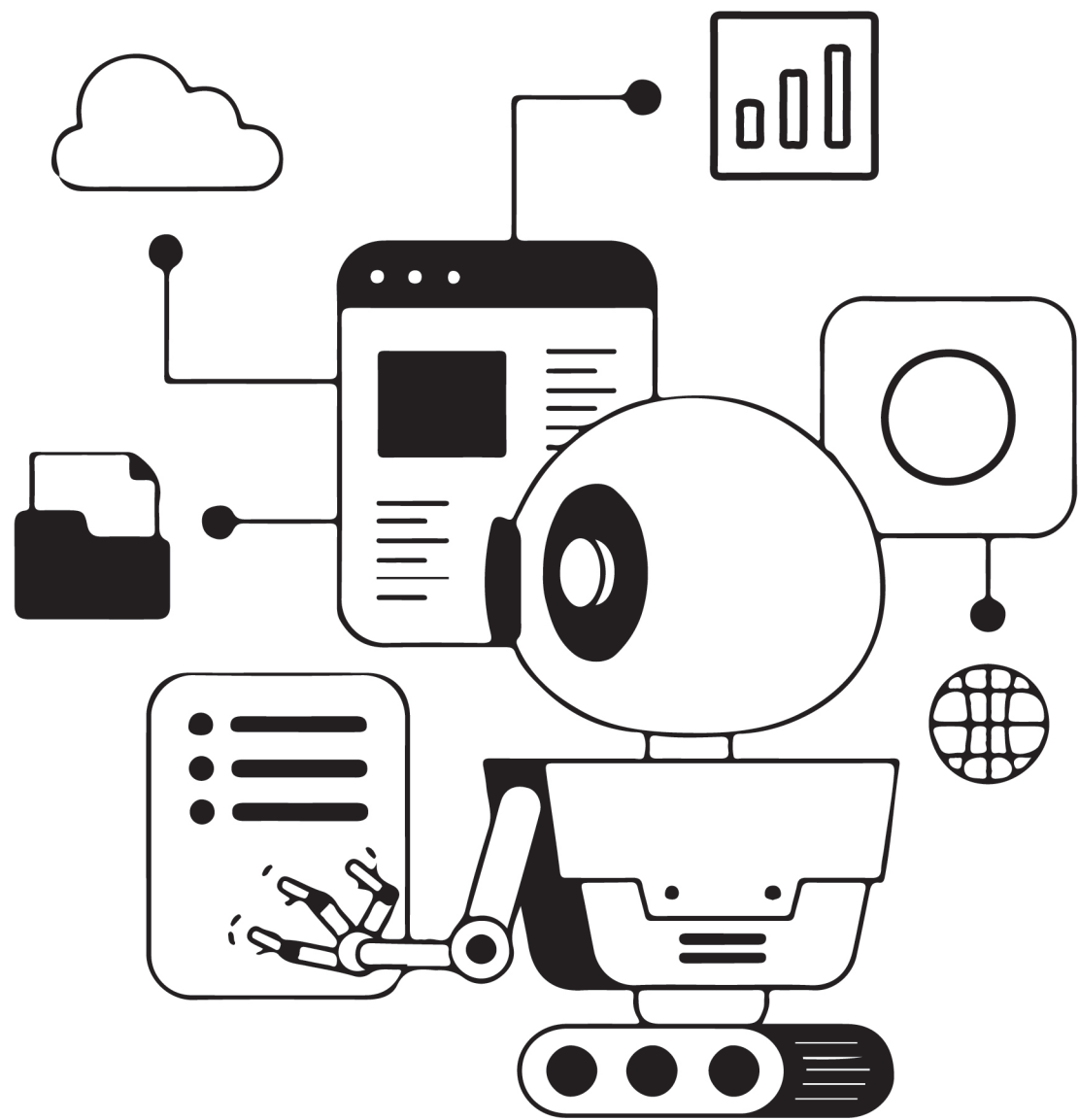


Pay attention!

Bot management

Bot management refers to blocking the traffic of unwanted or malicious bots on the Internet while allowing access to beneficial bots to web properties. Bot management achieves this by detecting bot activity, distinguishing between desired and undesired bot behavior, and identifying sources of unwanted activity.







Pay attention!

Robots.txt file

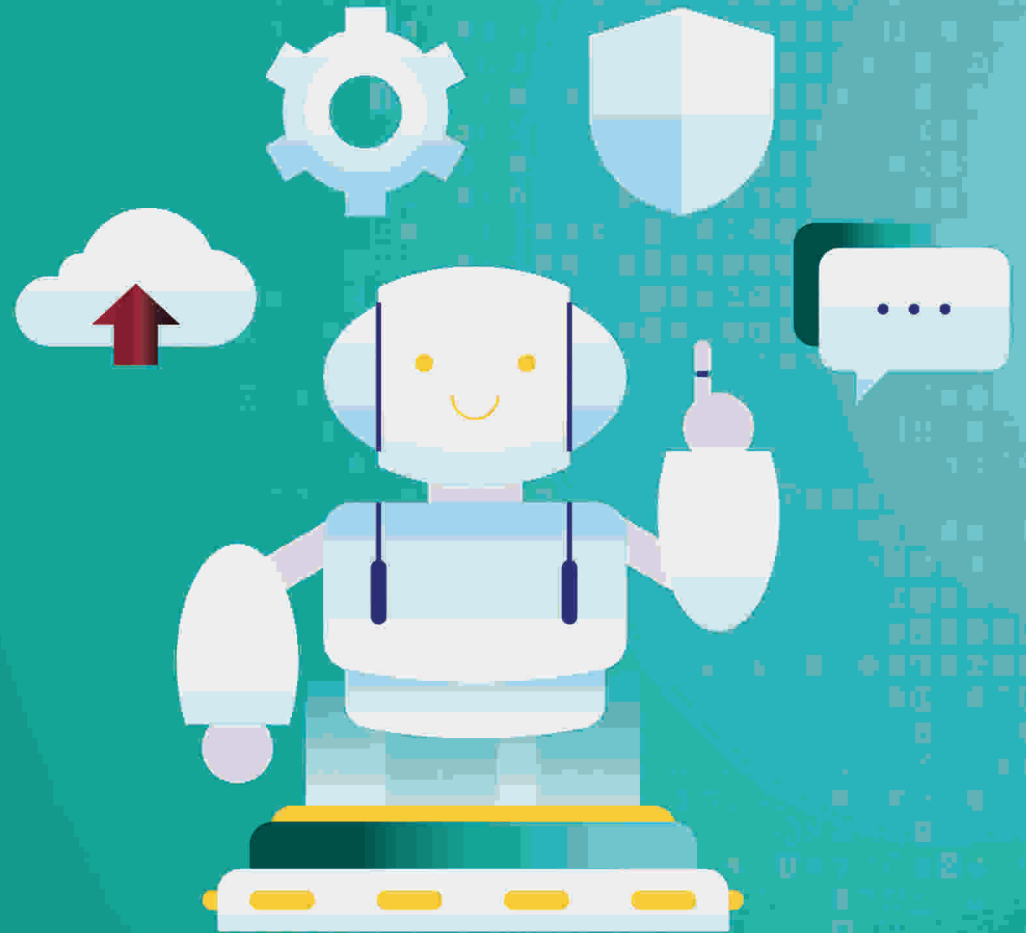
It is a file located on a web server that outlines rules for bot access to the properties on that server. Anyone programming a bot should ensure that their bot checks the robots.txt file of the website before accessing it. Naturally, malicious bots do not adhere to this system, hence the need for bot management.

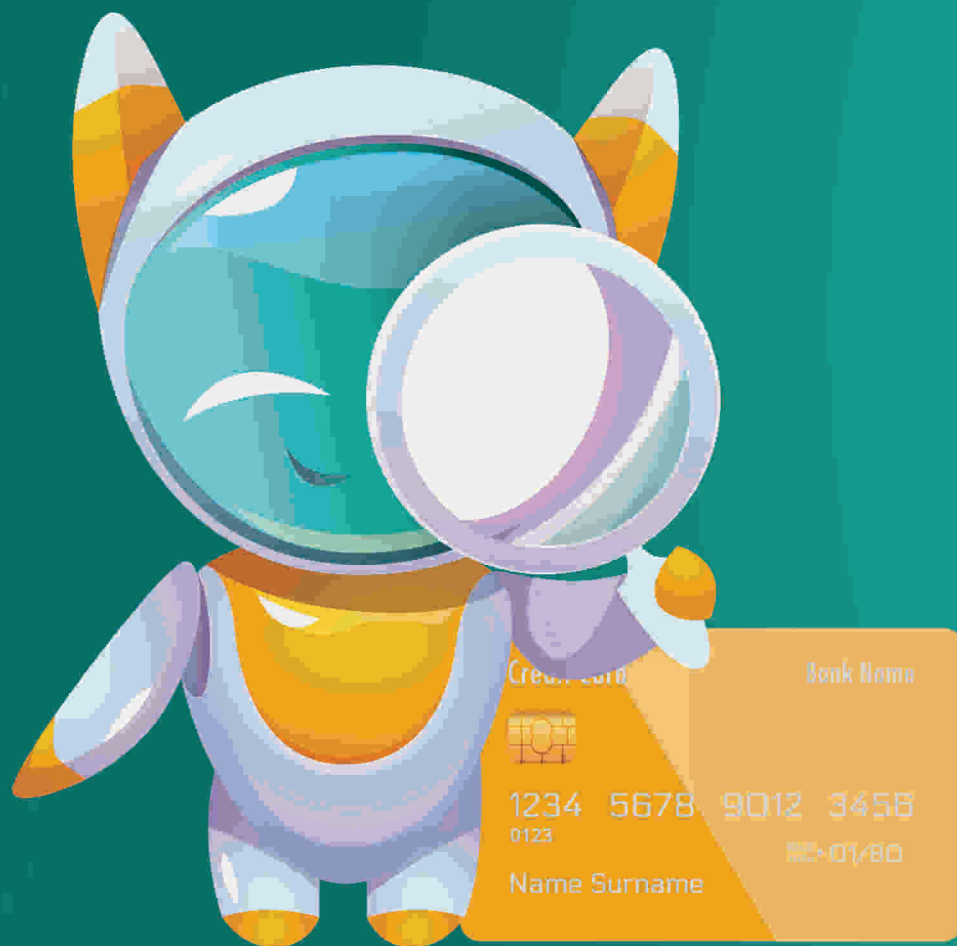


Pay attention!

Bot Manager

It is a software product that manages bots, where bot managers can block some bots and allow others to pass, instead of simply blocking all non-human traffic; because if all bot programs like Google bot are blocked and cannot index a page, that page will not appear in Google search results; resulting in a decrease in the number of visits to the website.





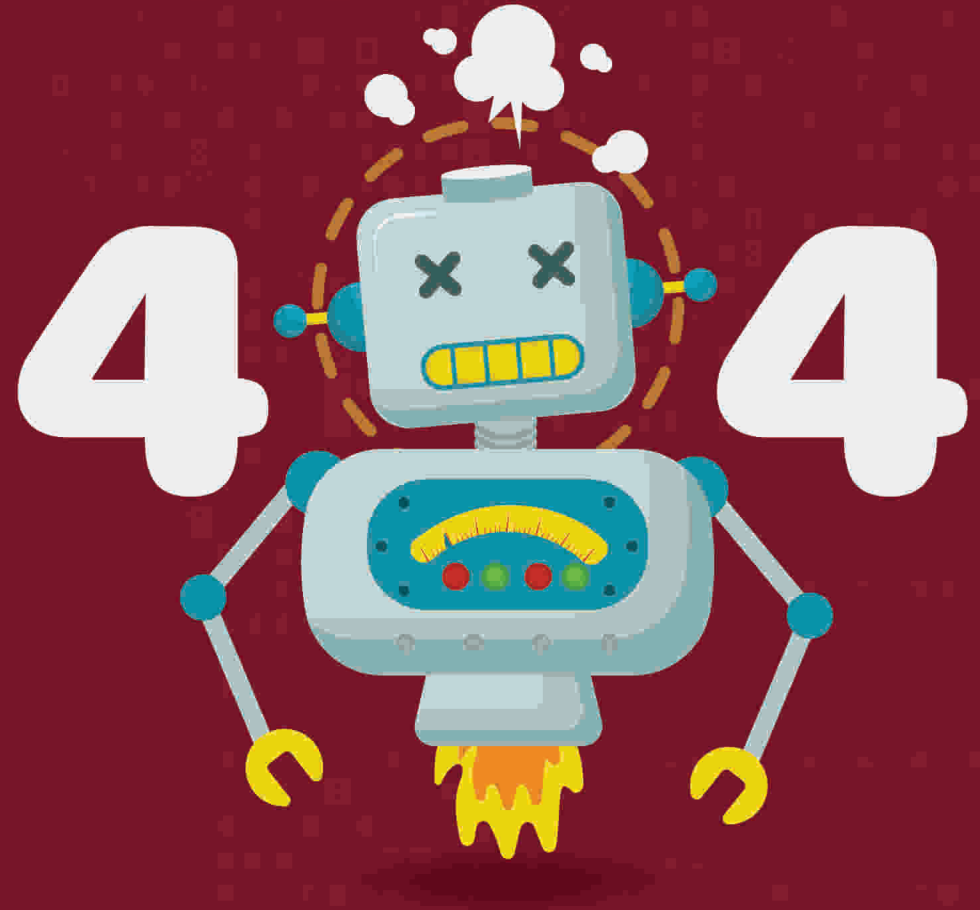
Pay attention!

Account takeover (ATO) bots

Also known as credential stuffing bots, these bots can gain access to user accounts by launching credential stuffing attacks. This involves utilizing stolen usernames and passwords or infiltrating user accounts using sensitive information such as credit card details and banking information.

Risks of malicious bots

- Manipulation of content
- Violations of data privacy
- DDoS attacks
- Diminution of trust.
- Fraud and theft.



Features of bots in the Digital Ecosystem

1

Efficiency.

3

Personalization.

2

Availability.

4

Low cost.

5

Scalability.



The benefits of social media bots

1

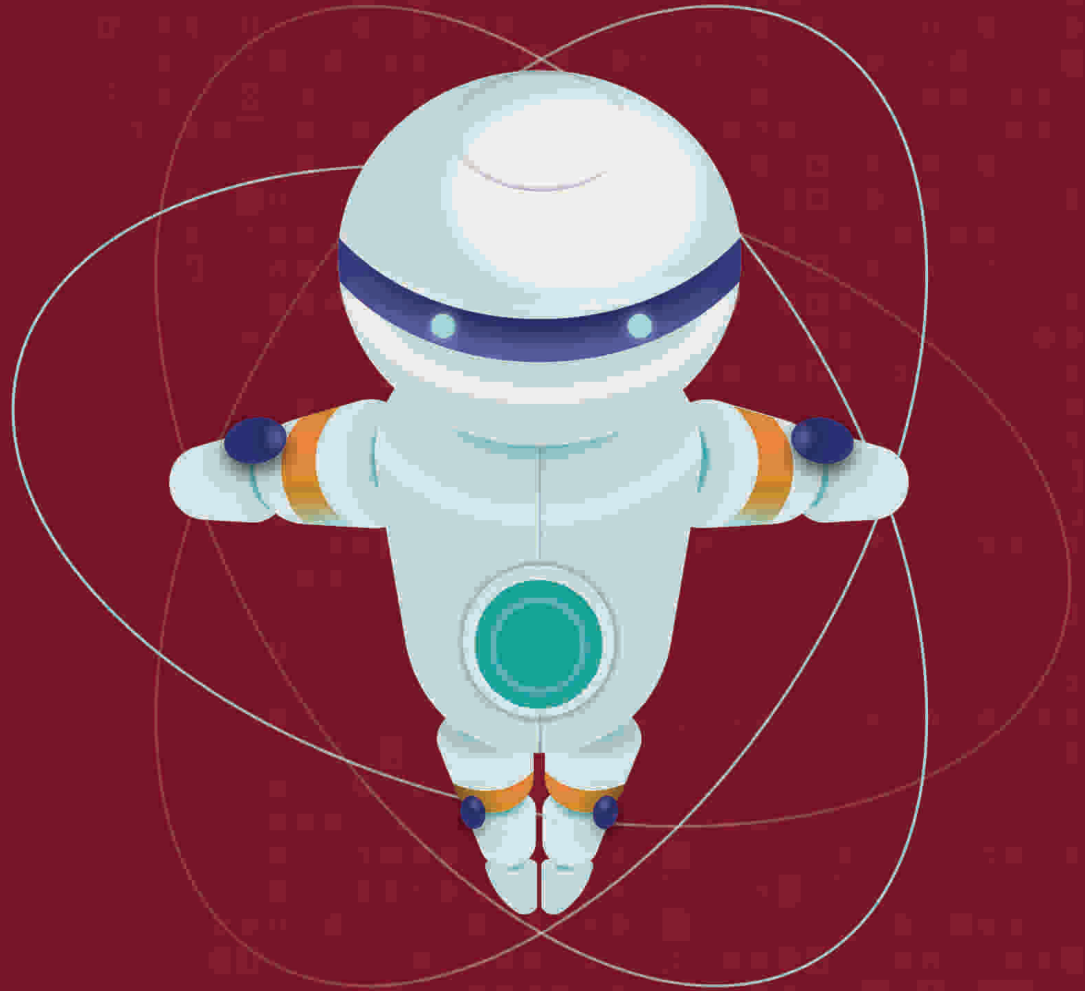
Creating and publishing social media posts.

2

Collecting user information.

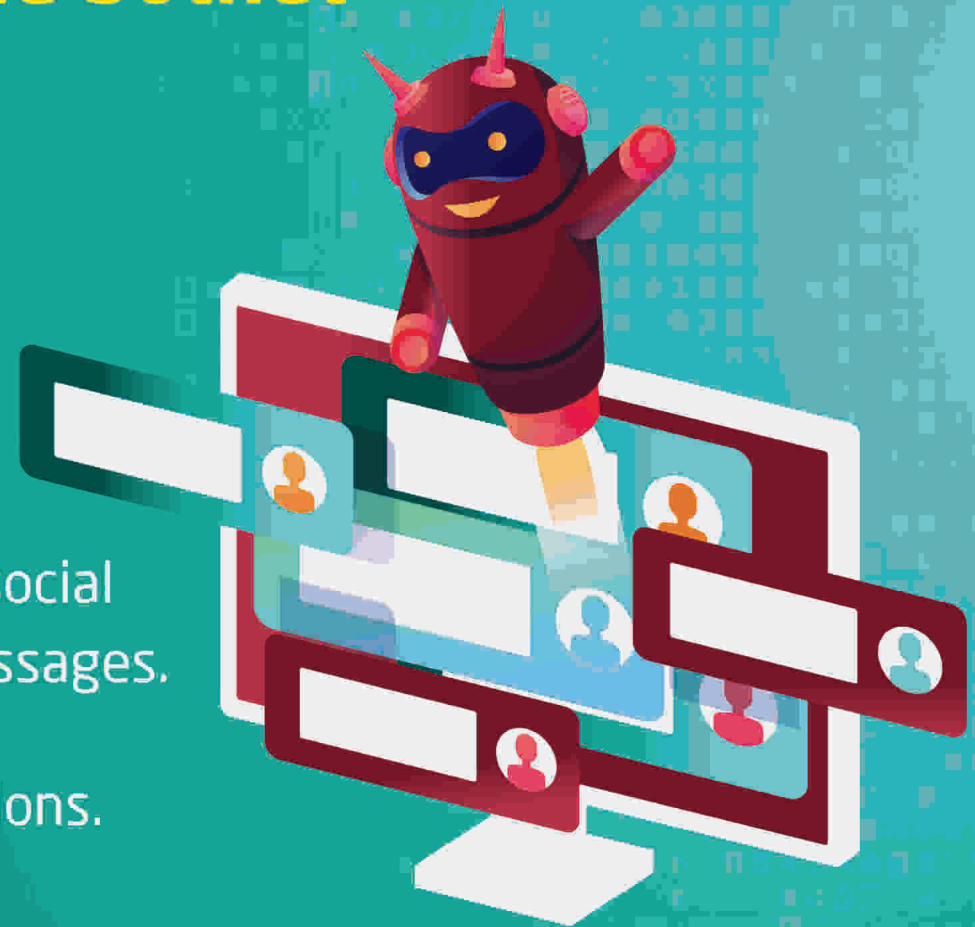
3

Providing customer support.



Indications of devices and files being affected by the botnet

- Decreased processing speed.
- Frequent application crashes.
- Slow internet speed.
- Increase in the number of unauthorized social media posts and unauthorized email messages.
- Existence of unfamiliar files and applications.



What should you do if your device is infected with botnet malware?

- Disconnect your device from the Internet.
- Identify malware using antivirus software.
- Remove the malware automatically or manually.
- Reset your device and reinstall your operating system.
- Report the infection of the bots to the relevant authority.



How to prevent bot Attacks

- Avoid clicking on suspicious links.
- Avoid downloading any email attachments from unfamiliar senders.
- Do not download software or programs from unverified sources.
- Activate the firewall on your device.
- Keep your internet of things devices on a separate Wi-Fi network.
- Set up a guest network on your Wi-Fi router.
- Regularly update the operating system and other software.
- Install antivirus software.





Competitions

What is it?


A program that performs automated, repetitive, and predetermined tasks. Typically mimic or replace human user behavior, but they operate much faster than humans.

They are internet-connected devices, each of which runs one or more bots, often without the knowledge of the device owners, since each device has its own IP address. So, it is difficult to determine the source of its traffic.

It is a bot designed to participate in conversations with users, typically through text or voice interfaces, using technologies such as Natural Language Processing (NLP) and Artificial Intelligence (AI).

This type of bots concentrates on repetitive tasks, data processing, and other routine activities that could consume a significant amount of time for humans.





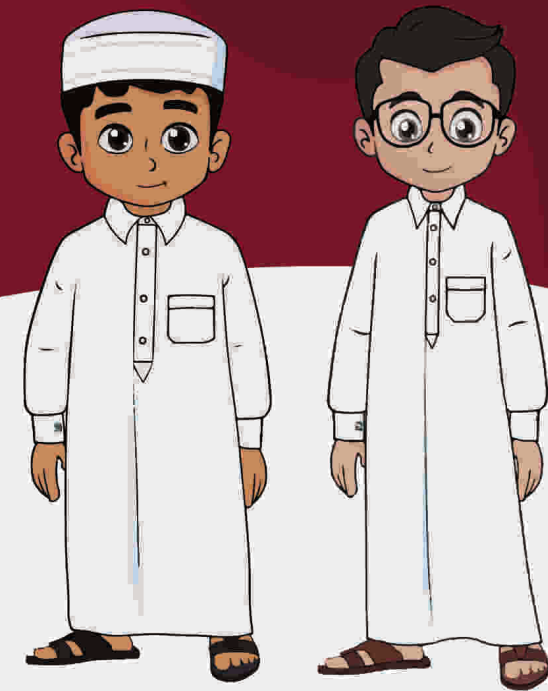
It can send unwanted messages to targets, such as spamming software that launch phishing attacks or disseminate negative comments on social media platforms to tarnish the reputation of a specific brand or company. Similarly, it can be employed for the illicit promotion of products or services.

A type of bots that distribute malicious software, such as Ransomware, viruses, Trojans, worms, and others, by exploiting vulnerabilities in the targeted systems.

It is a file located on a web server that outlines rules for bot access to the properties on that server.

Refers to blocking the traffic of unwanted or malicious bots on the internet while allowing access to beneficial bots to web properties by detecting bot activity, distinguishing between desired and undesired bot behavior, and identifying sources of unwanted activity.

Choose the correct answer:



1- Web bots are also referred to by other names such as

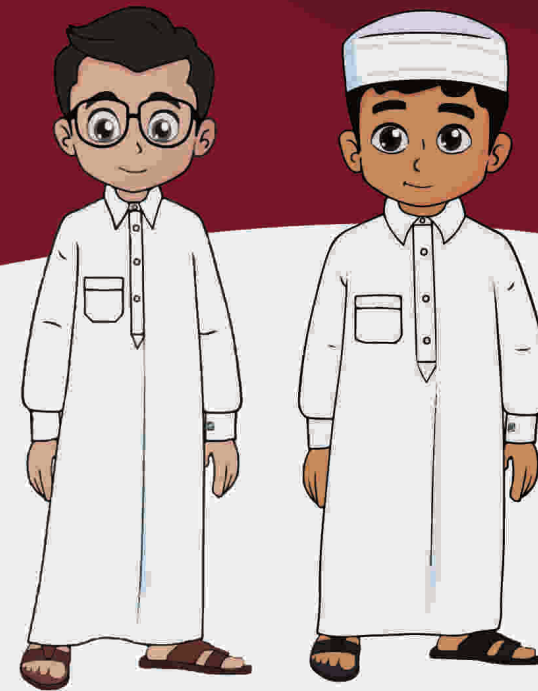
- ☐ Spiders
- ☐ Crawlers
- ☐ Web bots
- ☐ All of the above

2- Bots are divided into.... .

- ☐ Malicious bots
- ☐ Beneficial bots
- ☐ Neutral bots

3- One of the most common ways through which bots infect your computer is.... .

- ☐ Copying
- ☐ Downloading
- ☐ Transferring



4- Bots are considered crucial in the digital ecosystem for a number of reasons, including..... .

- ☐ Generalization
- ☐ The ability to execute a single task in a non-repetitive manner.
- ☐ Working around the clock

5- Beneficial bots include

- ☐ DDoS bots
- ☐ Spam Bots
- ☐ Backlink checker bots

6- Backlinks are considered important for

- ☐ Search Engine Optimization (SEO)
- ☐ To automate tasks on social media platforms
- ☐ To crawl the internet and find the information

7- Objectives of a good bot manager include

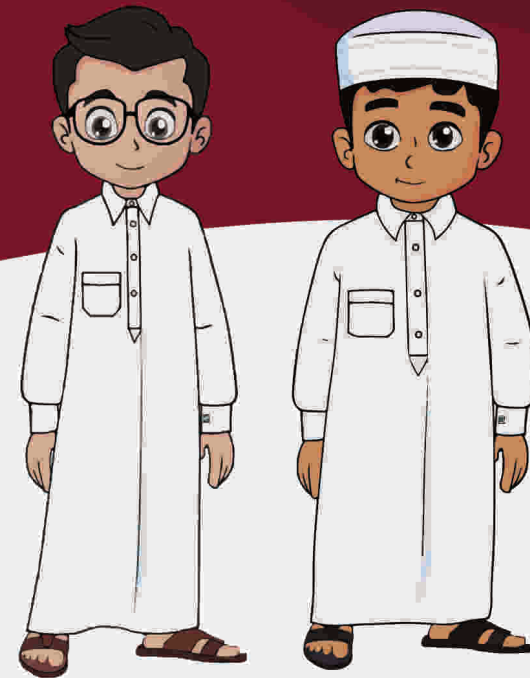
- ☐ Analyzing the behavior of the bot
- ☐ Adding malicious bot programs to the allowed lists
- ☐ Not limiting the excessive use of bots for service
- ☐ Allowing malicious bots access to specific content

8- to prevent bots attacks:

- ☐ click on all INTERNET links
- ☐ download all e-mail attachments
- ☐ make WI-FI allowance for all
- ☐ frequently update operating system and other applications

9- Indications of devices and files being affected by the botnet include

- ☐ An increase in processing speeds
- ☐ Not experiencing frequent application crashes
- ☐ Slow internet speed



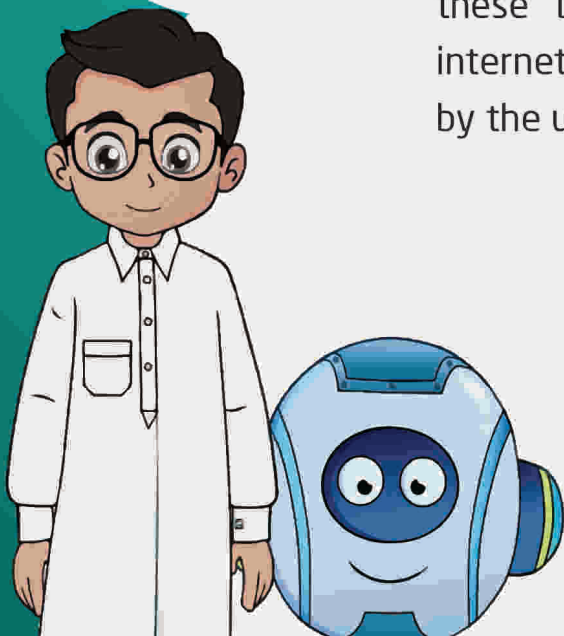
Compose the appropriate word from the letters provided in the table

Malware scripts that automatically browse websites, fill out web forms, and illegitimately manipulate data on websites.

W	E	B	B	O
T	S	A	L	O
Y	B	B	A	L

Also known as web crawling programs, these bots are used to crawl the internet and find information needed by the users.

S	T	B	E
O	H	ENG	CH
R	S	INE	A



Also known as credential stuffing bots, these bots can gain access to user accounts by launching attacks that involve utilizing stolen usernames and passwords or infiltrating user accounts using sensitive information such as credit card details and banking information.

R	Th	U	A	E
K	O	T	O	U
CC	N	B	T	T
V	T	A	A	S

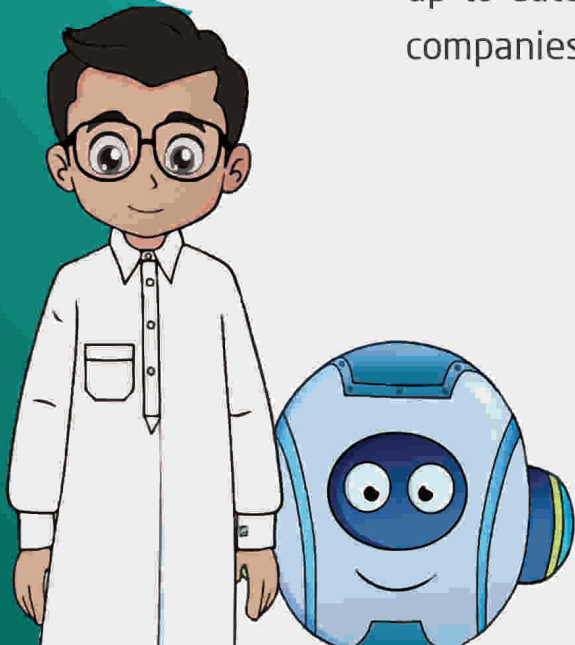
This bot is designed to purchase fast-moving products or services in large quantities, making it difficult for genuine customers to complete legitimate purchase transactions.

E	P	E	A
K	O	T	O
TIV	I	B	S
X	T	A	GH



These are bots designed to gather information from various sources and create comprehensive directories or content lists to provide users with up-to-date information about websites, companies, products, or services.

R	C	E	A
D	O	C	R
T	L	T	S
A	L	O	O



Introduction Project

A grade three project is a large task that you are asked to complete. It is usually done in a group of four or five students. The project is usually done in a group of four or five students. The project is usually done in a group of four or five students.

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الوكالة الوطنية للأمن السيبراني
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