ALGO
QCM

1. **L'implémentation d'une liste récursive sous la forme d'un tableau d'éléments, est dite ?**
   - (a) statique
   - (b) chaînée
   - (c) contiguë
   - (d) dynamique

2. **Une pile est une structure intrinsèquement ?**
   - (a) Récursive
   - (b) Itérative
   - (c) Répétitive
   - (d) Alternative

3. **Quelles opérations définissent une liste récursive ?**
   - (a) debut
   - (b) longueur
   - (c) fin
   - (d) cons

4. **La construction d'une liste itérative est basée sur ?**
   - (a) L'ajout d'un élément à la première place d'une liste
   - (b) La récupération du reste de la liste
   - (c) L'insertion d'un élément à la $K^{ième}$ place
   - (d) L'ajout d'un élément en tête de liste

5. **L'implémentation d'une liste itérative sous la forme d'une liste chaînée, n'est pas possible ?**
   - (a) faux
   - (b) vrai

6. **L'implémentation d'une pile sous la forme d'une liste chaînée, n'est pas possible ?**
   - (a) faux
   - (b) vrai

7. **L'implémentation d'une pile sous la forme d'un tableau d'éléments, est dite ?**
   - (a) statique
   - (b) chaînée
   - (c) contiguë
   - (d) dynamique

8. Que représentent opération1 et opération2 dans l'axiome suivant (dans lequel e est un élément et x une pile) ?
   opération1(opération2 (e,x)) = e

   (a) opération1 = sommet, opération2 = dépiler

   (b) opération1 = dépiler, opération2 = sommet

   (c) opération1 = sommet, opération2 = empiler

   (d) opération1 = dépiler, opération2 = empiler

9. Une pile est une structure ?

   (a) LIFO

   (b) PIPO

   (c) FIFO

   (d) FIPO

10. Que représentent opération1 et opération2 dans l'axiome suivant (dans lequel e est un élément et x une pile) ?
    opération1(opération2 (e,x)) = x

    (a) opération1 = sommet, opération2 = dépiler

    (b) opération1 = dépiler, opération2 = sommet

    (c) opération1 = sommet, opération2 = empiler

    (d) opération1 = dépiler, opération2 = empiler

QCM 10

lundi 21 novembre 2022

Question 11

Soient m et n deux entiers relatifs tels que $m \mid n$. On a

✗ a. $\exists k \in \mathbb{Z}$ tel que $m = nk$

✗ b. $\forall k \in \mathbb{Z}$ tel que $m = nk$

⟍ c. $\exists k \in \mathbb{Z}$ tel que $n = mk$

   d. $\forall k \in \mathbb{Z}$ tel que $n = mk$

   e. Aucune des autres réponses

Question 12

Soient a, b et c trois entiers relatifs non nuls. On a

   a. $a \mid b + c \implies a \mid b$ et $a \mid c$

   b. $a \mid bc \implies a \mid b$ et $a \mid c$

⟍ c. $a \mid b \implies a \mid 2bc$

⟍ d. $a \mid b$ et $b \mid c \implies a \mid c$

   e. Aucune des autres réponses

Question 13

Soient $n \in \mathbb{N}^*$ et $(a, b) \in \mathbb{Z}^2$ tel que $a \equiv b\,[n]$. On a :

✗ a. $a - b \mid n$

⟍ b. $\exists k \in \mathbb{Z}$ tel que $a = n + bk$

⟍ c. $a - b$ est un multiple de n

⟍ d. $b \equiv a\,[n]$

   e. Aucune des autres réponses

Question 14

Cochez la(les) bonne(s) réponse(s)

    a. $54 \equiv 1\,[11]$

    b. $68 \equiv 2\,[11]$

    c. $54 + 68 \equiv 1\,[11]$

    d. $54 \times 68 \equiv 8\,[11]$

    e. Aucune des autres réponses

Question 15

Soient $(a, b) \in (\mathbb{N}^*)^2$. On a

    a. $\mathrm{pgcd}(a, b) = 3 \iff \exists\,(u, v) \in \mathbb{N}^2$ tel que $au + bv = 3$

    b. $\mathrm{pgcd}(a, b) = 1 \iff \exists\,(u, v) \in \mathbb{N}^2$ tel que $au + bv = 1$

    c. $\mathrm{pgcd}(a, b) = 3 \iff \exists\,(u, v) \in \mathbb{Z}^2$ tel que $au + bv = 3$

    d. $\mathrm{pgcd}(a, b) = 1 \iff \exists\,(u, v) \in \mathbb{Z}^2$ tel que $au + bv = 1$

    e. Aucune des autres réponses

Question 16

Cochez la(les) bonne(s) réponse(s)

    a. $\forall d \in \mathbb{N}^*,\ d \mid 23 \implies d = 23$

    b. 2 est un nombre premier.

    c. Si p est un nombre premier et n un entier quelconque alors $\mathrm{pgcd}(p, n) = 1$

    d. Aucune des autres réponses

Question 17

La suite (u_n) est bornée si et seulement si

    a. (u_n) est majorée et minorée

    b. $\forall n \in \mathbb{N},\ \exists\,(m, M) \in \mathbb{R}^2$ tel que $m \leq u_n \leq M$

    c. $\forall\,(m, M) \in \mathbb{R}^2,\ \exists n \in \mathbb{N}$ tel que $m \leq u_n \leq M$

    d. $\exists M \in \mathbb{R}$ tel que $\forall n \in \mathbb{N},\ |u_n| \leq M$

    e. Aucune des autres réponses

Question 18

Soit la suite (u_n) définie pour tout entier $n > 1$ par $u_n = \dfrac{1}{n-1}$. (u_n) est

    a. majorée et non minorée

    b. minorée et non majorée

    c. ni minorée, ni majorée

    d. bornée

    e. Aucune des autres réponses

Question 19

Cochez la(les) suite(s) divergente(s)

    a. (u_n) telle que $\lim\limits_{n \to +\infty} u_n = 2$

    b. (u_n) telle que $\lim\limits_{n \to +\infty} u_n = -\infty$

    c. (u_n) telle que (u_n) n' a pas de limite.

    d. (u_n) telle que $\forall n \in \mathbb{N}, 0 \le u_n \le \dfrac{1}{n+1}$.

    e. Aucune des autres réponses

Question 20

On considère la suite (q^n) avec $q \in \mathbb{R}$. On a

    a. Pour $q = \dfrac{3}{4}$, $q^n \xrightarrow[n \to +\infty]{} 0$

    b. Pour $q = 3$, $q^n \xrightarrow[n \to +\infty]{} 0$

    c. Pour $q = -\dfrac{3}{4}$, $q^n \xrightarrow[n \to +\infty]{} 0$

    d. Pour $q = -3$, $q^n \xrightarrow[n \to +\infty]{} 0$

    e. Aucune des autres réponses

Grammar:

21. How _____ your event that you _____ to ?

a. was/gone
b. was/went
c. was/did
d. was/showed

22. _____ you and your husband at the movies last night ?

a. was
b. did
c. were
d. are

23. _____ we eat all the cake ?

a. Did
b. Was
c. Were
d. Have

24. Last week I _____ my dog to the veterinarian.

a. have taken
b. taked
c. took
d. taked

25. The clock in the living room _____ six hours ago. It shows 3 :00, but it's 9 :00 now.

a. has stopped
b. stop
c. stopped
d. stoped

TOEIC :

TRAVEL TO NACU CONFERENCE

Airline Arrangements
Sky High Air and Mountain High Airlines will serve as the official carriers for attendees of the Forty-Fourth Annual NACU Conference. Both carriers have agreed to offer low fares for conference attendees. To obtain information on discount airfares, call Sky High Air at (800) 555-0987 and refer to Convention Number CV786309 or call the Mountain High Airlines Reservation Desk at (800) 555-7382 and refer to Convention Number HJ987.

Ground Transportation
The trip from Rushmore Airport to downtown hotels is about 15 miles and takes 45 minutes by shuttle bus or car.

By Shuttle Bus: Airporter (708) 555-9541 offers a shuttle bus service from the airport to the Fairmont Hotel and the Regency Hotel. Departure time is every 20 minutes from 9:00 A.M. to 8:00 P.M. and every 30 minutes from 8:00 P.M. to 11:00 P.M. The Airporter main desk is located on the lower level, near Exit B. No reservations are required, but tickets must be purchased at the Airporter main desk, at the conference registration desk in the convention center, or at the travel agency located in the Regency Hotel. Tickets are not available directly from the shuttle bus drivers.

Shuttle Bus One-Way Fares		Shuttle Bus Round-Trip Fares		By Taxi:
Adult	$9.00	Adult	$14.00	Taxis are readily available outside Exit C in the main terminal.
Child	$4.00	Child	$6.00	Appropriate fare to downtown
Family	$17.00	Family	$26.00	hotels is $18.00–$25.00.

Parking
For attendees driving to the conference, parking is available at both hotels. The Fairmont Hotel provides parking for $15.00 per day, with in/out privileges. The Regency Hotel offers parking for $10.00 per day Monday to Friday, $8.00 on Saturday, and $6.00 on Sunday.

26. On whose website would this information most likely be found?

a) Sky High Air
b) NACU
c) Regency Hotel
d) Airporter

27. The word 'serve' in paragraph 1, line 1 is closest in meaning to _____.

a) wait on
b) operate
c) obey
d) give out

28. How long does it take to drive to downtown hotels from the airport?

a) 15 minutes
b) 20 minutes
c) 30 minutes
d) 45 minutes

29. How much does it cost to park at the Regency Hotel on Thursdays ?

a) $6.00
b) $8.00
c) $10.00
d) $15.00

30. Mr. Ross, ____ is repairing the interior of lobby, was recommended by a friend of the building manager.

a) himself
b) he
c) who
d) which

Look at the following texts and answer the questions 31 to 35:

Harris Ludlow

| Home | Place Order | **Products** | Customer Service | Contact Us |

Size	Price
50 cm (carry-on)	$145
60 cm	$179
70 cm	$225
Complete set	$515

Colors: Classic Black (coming soon–Ocean Blue)

Details:

Designed for hard use, the Wayfarer 200 luggage set features three pieces that are both lightweight and durable.
- Expandable central pockets
- Four rotating wheels
- Easy-opening, tight-sealing clasps

April 18

I frequently travel for business, often carrying fragile samples with me on the plane. Most carry-ons these days are soft-sided, so it was a relief to find something that offers adequate protection. I've been mostly happy with the carry-on, but the larger bags have caused some problems. My black cases look so similar to everyone else's that other travelers have almost taken them by mistake! More variety would be nice.

I also have some reservations about the mechanical elements of this set. In particular, the retraction mechanism of the wheels appears so delicately constructed as to be in danger of collapse.

Asina Amorapanth

April 20

Dear Ms. Amorapanth,

We're sorry to hear about your trouble with our product. As a result of feedback like yours, we've introduced a new color option. If you contact us at customersupport@hlluggage.com, we'll send you, in our attractive new color, a duplicate of the large suitcase to complement your Wayfarer 200 set. Note that this gift will be sent to you after you verify that you posted the April 18 review.

We also hear your concerns about our luggage components. Rest assured that our lightweight mechanism has been proven to withstand years' worth of rough treatment, retracting and extending smoothly over 10,000 times under stressful conditions in our laboratories.

Damien Cosme, Harris & Ludlow customer service

31. What does Ms. Amorapanth write about her luggage?
    a. She likes the color.
    b. The cases are too large.
    c. She purchased the bags recently.
    d. The carry-on protects her samples.

32. In the review, the word "reservations" in paragraph 2, line 1, is closest in meaning to
    a. arrangements
    b. concerns
    c. experiences
    d. features

33. What does Mr. Cosme offer to Ms. Amorapanth?
    a. A full set of blue luggage
    b. A full set of black luggage
    c. A large blue suitcase
    d. A small black suitcase

34. What must Ms. Amorapanth do in order to receive a gift from Harris Ludlow?
    a. Prove that she is the author of a product review
    b. Complete a survey about new products
    c. Retract negative feedback given on a Web site
    d. Send a package containing a defective suitcase

35. What does Mr. Cosme indicate about the wheels of the suitcases?
    a. They have been thoroughly tested.
    b. They have been redesigned to roll more easily.
    c. They are as small as possible for the size of the suitcase.
    d. They are less noisy than those of previous models.

Attention Everyone: Group Photo This Saturday

Exciting news—*Tasty Bites Magazine* will be featuring our restaurant in an article about Dublin's best dining establishments! They have arranged for one of their photographers to photograph us on Saturday, 4 June, at 10:00 A.M., before preparations for the day begin.

All employees will be included, so please plan to come in a bit sooner than scheduled on Saturday morning wearing your uniform. The session will take 30 minutes.

We have achieved so much since we opened, and you should all be very proud of this recognition.

To:	Herman Keel <hkeel@bentonsidebistro.net>
From:	Hilary Seaton <hseaton@hbsphotography.com>
Date:	Wednesday, 1 June
Subject:	Saturday Photography Appointment

Dear Mr. Keel,

I am writing to confirm your group photography session at 10:00 A.M. on Saturday. As discussed, this photo shoot will take place at your restaurant, and I will photograph your staff along the wall in the main dining hall. You mentioned that your waitstaff will need to start getting ready for the day at 10:30 A.M., and that should not be a problem. The shoot should be finished by 10:30 A.M.

Please let me know if you have any questions. Otherwise I will see you on Saturday!

Hilary Seaton
HBS Photography

Bistro Pleases

Enter Bentonside Bistro any day for lunch or dinner, and you'll hear the sounds of clinking forks and chattering patrons. "That's the sound of happy diners," says Herman Keel, the restaurant's owner.

Opened two years ago, the bistro has exceeded expectations. The menu features traditional Irish dishes prepared by chef Deirdre Hanrahan. She notes, "We choose ingredients that are at the height of summer, fall, winter, and spring, and showcase these on our menu."

On a recent Wednesday afternoon, Jacinta Coelho, a visitor from Brazil, was dining at the bistro. "I can't get over the freshness and homemade taste!" exclaimed Ms. Coelho. "It's like the chef went outside and selected the ingredients just for me."

Bentonside Bistro is located at 1644 Bentonside Road and is open Tuesday through Saturday from 11:30 a.m. to 9:00 p.m. The interior is painted in bright shades of blue reminiscent of the ocean, with a rotating gallery of artwork adorning the walls. The staff is friendly and the delicious food is reasonably priced. Reservations are not required.

By Declan Mulroney, Staff Writer

36. Who most likely posted the notice?
   a. Ms. Seaton
   b. Mr. Keel
   c. Ms. Hanrahan
   d. Mr. Mulroney

37. What are employees instructed to do on June 4?
   a. Arrive earlier than usual
   b. Attend an awards banquet
   c. Be interviewed for a newspaper article
   d. Discuss locations for a photo shoot

38. What is indicated about the waitstaff?
   a. They have been featured in Tasty Bites Magazine more than once.
   b. They will be photographed against a blue background.
   c. They take turns working the morning shift.
   d. They wear brightly colored uniforms.

39. What is true about the Bentonside Bistro?
   a. It is open every day for lunch.
   b. It has recently changed ownership.
   c. It specializes in Brazilian cuisine.
   d. It revises the menu seasonally.

40. What does Ms. Coelho say about her meal?
   a. She is impressed with the quality of it.
   b. She would like to prepare one like it at home.
   c. She saw it featured in a magazine.
   d. She thought it was reasonably priced.

QCM Physique/Electronique – InfoS1

Pensez à bien lire les questions ET les réponses proposées

Pour les questions suivantes, une ou plusieurs bonnes réponses sont possibles.

Q41. On donne le système d'équations horaires suivant, en représentation cartésienne (dans les unités usuelles) :
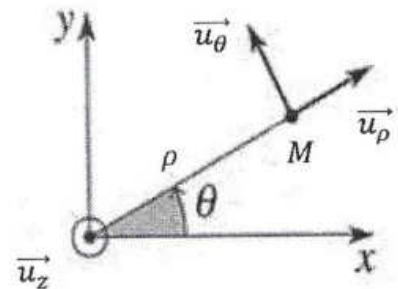
$$\begin{cases} x(t) = 3 \cos(2t) \\ y(t) = 3 \sin(2t) \end{cases}$$

Cocher la ou les affirmations vraie(s) :

a. L'équation de la trajectoire est un cercle de centre (0,0) et de rayon R = 9.

b. La vitesse angulaire est $\omega = 2\ rad.s^{-1}$

c. La vitesse angulaire est $\omega = 2t\ rad.s^{-1}$

d. Le mouvement est uniforme.

Q42. Cocher la ou les affirmations vraie(s), pour un angle θ entre la direction horizontale et la direction du vecteur $\overrightarrow{u_\rho}$ comme indiqué sur le schéma :

a. $\overrightarrow{u_\rho} = \cos\theta\,\overrightarrow{u_x} + \sin\theta\,\overrightarrow{u_y}$

b. $\overrightarrow{u_\rho} = \sin\theta\,\overrightarrow{u_x} + \cos\theta\,\overrightarrow{u_y}$

c. $\dot{\overrightarrow{u_\rho}} = -\sin\theta\,\overrightarrow{u_x} + \cos\theta\,\overrightarrow{u_y}$

d. $\overrightarrow{u_\theta} = \sin\theta\,\overrightarrow{u_x} + \cos\theta\,\overrightarrow{u_y}$

Q43. Le vecteur vitesse en coordonnées cylindriques s'écrit :

a. $\vec{v} = \dot{\rho}\,\overrightarrow{u_\rho} + \dot{z}\,\overrightarrow{u_z}$

b. $\vec{v} = \dot{\rho}\,\overrightarrow{u_\rho} + \rho\dot{\theta}\,\overrightarrow{u_\theta} + \dot{z}\,\overrightarrow{u_z}$

c. $\vec{v} = \rho\,\overrightarrow{u_\rho} + \rho\dot{\theta}\,\overrightarrow{u_\theta} + \dot{z}\,\overrightarrow{u_z}$

d. $\vec{v} = \rho\,\overrightarrow{u_\rho} + \rho\dot{\theta}\,\overrightarrow{u_\theta}$

Q44. Le vecteur accélération en coordonnées cylindriques s'écrit :

a. $\vec{a} = (\ddot{\rho} - \rho\dot{\theta}^2)\,\overrightarrow{u_\rho} + (\rho\ddot{\theta} + \dot{\rho}\dot{\theta})\,\overrightarrow{u_\theta} + \ddot{z}\,\overrightarrow{u_z}$

b. $\vec{a} = \ddot{\rho}\,\overrightarrow{u_\rho} + (\rho\ddot{\theta} + 2\dot{\rho}\dot{\theta})\,\overrightarrow{u_\theta} + \ddot{z}\,\overrightarrow{u_z}$

c. $\vec{a} = \rho\ddot{\theta}\,\overrightarrow{u_\theta} + \ddot{z}\,\overrightarrow{u_z}$

d. $\vec{a} = (\ddot{\rho} - \rho\dot{\theta}^2)\,\overrightarrow{u_\rho} + (\rho\ddot{\theta} + 2\dot{\rho}\dot{\theta})\,\overrightarrow{u_\theta} + \ddot{z}\,\overrightarrow{u_z}$
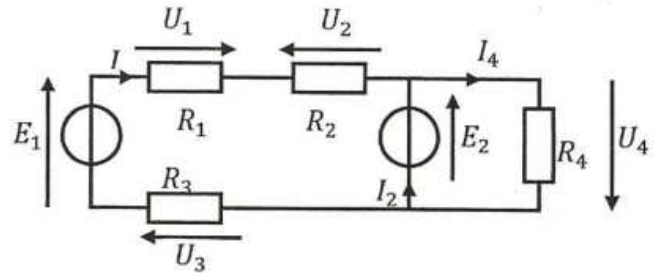
Q45. Le vecteur accélération en coordonnées polaires lors d'un mouvement circulaire de vitesse angulaire constante s'écrit :

a. $\vec{a} = \vec{0}$

c. $\vec{a} = -\rho\dot{\theta}^2\vec{u_\rho} + 2\dot{\rho}\dot{\theta}\,\vec{u_\theta}$

b. $\vec{a} = -\rho\dot{\theta}^2\vec{u_\rho}$

d. $\vec{a} = -\rho\dot{\theta}^2\vec{u_\rho} + \dot{\rho}\dot{\theta}\,\vec{u_\theta}$

Soit le circuit ci-contre (Q46&47).

Q46. Quelle est l'égalité correcte ?

a- $E_A + U_1 - U_2 + U_4 - E_2 + U_3 = 0$

b- $E_A + U_1 - U_2 - E_2 + U_3 = 0$

c- $E_A + U_1 + U_2 + E_2 + U_3 = 0$

d- $U_4 = E_2$
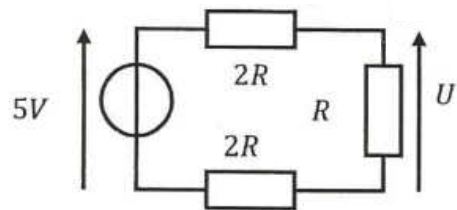
Q47. Quelle est l'égalité correcte ?

a- $I = I_2 + I_4$

c- $I = I_4 - I_2$

b- $I + I_2 + I_4 = 0$

d- $I = I_2 - I_4$

Q48. Dans le circuit ci-contre, que vaut U ?

a. $1\,V$

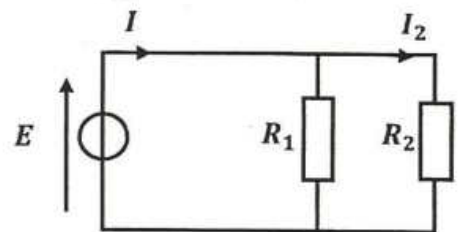b. $-1\,V$

c. $2V$

d. $-2\,V$

On considère le circuit ci-contre (Q49 &Q50)

$E = 10\,V$ $R_1 = 1\,k\Omega$

$R_2 = 2\,k\Omega$

Q49. L'intensité du courant I est :

a- $I = \dfrac{50}{3}\,mA$

c- $I = 15\,mA$

b- $I = 5\,mA$

d- $I = 10\,mA$

Q50. L'intensité du courant I_2 est : :

a- $I_2 = 10\,mA$

c- $I_2 = 10\,A$

b- $I_2 = 5\,mA$

d- $I_2 = 15\,mA$

QCM 4
Architecture des ordinateurs

Lundi 14 novembre 2022

Pour toutes les questions, une ou plusieurs réponses sont possibles.

51. Quel est le résultat de la soustraction suivante : $1000_{20} - 1_{20}$?
    - A. JJJ_{20}
    - B. FFF_{20}
    - C. $1FFF_{20}$
    - D. Aucune de ces réponses.

52. $101011000110001110_2 =$
    - A. Aucune de ces réponses.
    - B. $AC638_{16}$
    - C. 530616_8
    - D. $2B18E_{16}$

53. Choisir la (les) réponse(s) correcte(s).
    - A. Le bit le plus à gauche d'un mot est le LSB.
    - B. Le bit le plus à droite d'un mot est le MSB.
    - C. Le bit le plus à droite d'un mot est le LSB.
    - D. Le bit le plus à gauche d'un mot est le MSB.

54. Quel est le complément à 2 du mot sur 8 bits suivant : 00000000_2
    - A. 00000001_2
    - B. 11111110_2
    - C. 00000000_2
    - D. 11111111_2

55. Quel est le complément à 2 du mot sur 8 bits suivant : 36_{16}
    - A. Aucune de ces réponses.
    - B. CB_{16}
    - C. CA_{16}
    - D. $C9_{16}$

56. Combien d'entiers non signés peut-on coder sur n bits ?

   A. 2^n

   B. $2^n - 1$

   C. 2^{n-1}

   D. Aucune de ces réponses.

57. Combien d'entiers signés peut-on coder sur n bits ?

   A. 2^n

   B. $2^n - 1$

   C. 2^{n-1}

   D. Aucune de ces réponses.

58. Soit l'addition sur 8 bits signés suivante : 250 + 4

   Le résultat sur 8 bits signés est :

   A. −2

   B. 0

   C. 254

   D. Cette addition n'est pas possible.

59. Codez le nombre −255 sur 9 bits signés :

   A. 100000001_2

   B. 111111111_2

   C. 011111111_2

   D. Impossible

60. Codez le nombre −255 sur 10 bits signés :

   A. 1100000001_2

   B. 1111111111_2

   C. 1011111111_2

   D. Impossible

1. La cyber c'est ?

   (a) Amère

   (b) super

   (c) de l'air

   (d) hier

2. Mon cable usb se fait passer pour ?

   (a) un cable usb sans data

   (b) une clé usb

   (c) un routeur

   (d) un clavier

3. Altran a perdu combien ?

   (a) 20M€

   (b) 60M€

   (c) 21M€

   (d) 61M€

4. En 2021 combien d'entreprise ont été attaqué :

   (a) 54%

   (b) 46%

   (c) 100%

   (d) 73%

5. Quelle entreprise a été paralysée par un ransomware plus longtemps qu'une catastrophe naturelle ?

   (a) Altran

   (b) Soprastéria

   (c) Marriott international

   (d) Eurofins

6. Quelle vulnérabilité en 2021 a fait trembler le monde informatique ?

   (a) Eternal blue

   (b) Eternal romance

   (c) Log4j

   (d) Dirty Cow

7. De quelles catégories d'attaques on se protège principalement ?

   (a) SPAM
   (b) Attaques Opportunistes
   (c) Déni de service
   (d) Gouverments, concurrents, ...

8. Les gouvernements sont-ils intéressés par vous ?

   (a) OUI
   (b) NON
   (c) sérieux ?

9. L'acronyme RCE signifie :

   (a) Remote Commande Execution
   (b) Remote Code Execution
   (c) Remote Cours Epita
   (d) Regular and Common Expressions

10. L'exploit Eternal blue a été développé par :

   (a) CIA
   (b) DGA
   (c) NSA
   (d) un truc qui ne finit pas en A