ALGO
QCM

17

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

2. **Quelles opérations définissent une pile ?**
   (a) premier
   (b) enfiler
   ✗ (c) sommet
   ✗ (d) dépiler

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

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

5. **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

6. **Une pile est une structure ?**
   ✗ (a) LIFO
   (b) PIPO
   (c) FIFO
   (d) FIPO

7. 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

8. Les valeurs 4, 3, 1, 6, 2 et 5 sont ajoutées, dans cet ordre, à une structure linéaire vide. L'ordre de sortie 5 2 6 1 3 4 peut-il être celui d'une pile ?

   (a) oui

   (b) non

9. Les valeurs 4, 3, 1, 6, 2 et 5 sont ajoutées, dans cet ordre, à une structure linéaire vide. L'ordre de sortie 4 3 1 6 2 5 peut-il être celui d'une pile ?

   (a) oui

   (b) non

10. Les valeurs 4, 3, 1, 6, 2 et 5 sont ajoutées, dans cet ordre, à une structure linéaire vide. L'ordre de sortie 1 2 6 5 4 3 peut-il être celui d'une pile ?

    (a) oui

    (b) non

QCM 4

lundi 18 novembre

14

Question 11

Soit $(n, m) \in \mathbb{Z}^2$ tel que $n|m$. Cela signifie que :

    a. $\forall k \in \mathbb{Z},\ n = mk$

    b. $\exists k \in \mathbb{Z},\ n = mk$

    c. $\forall k \in \mathbb{Z},\ m = nk$

✗ d. $\exists k \in \mathbb{Z},\ m = nk$

    e. Aucune des autres réponses

Question 12

Cochez la(les) bonne(s) réponse(s)

✗ a. $-2|4$

    b. $9|21$

    c. $27|3$

✗ d. $6|6$

    e. Aucune des autres réponses

⚠ Question 13

Soit $(a, b, c) \in (\mathbb{Z}^*)^3$. On a

    a. $a|b \implies a|bc$

    b. $a|bc \implies a|b$

    c. $a|b$ et $a|c \implies a|(2b - 3c)$

    d. $a = bc \implies b|a$ et $c|a$

    e. Aucune des autres réponses

$\dfrac{b}{a}$ et $\dfrac{c}{a} \implies \dfrac{2b - 3c}{a}$ $\dfrac{a}{3}$ et $\dfrac{9}{3} \implies \dfrac{12 - 27}{3}$

Question 14

Soit $(a, b) \in \mathbb{Z}^2$ avec $b \neq 0$. La division euclidienne de a par b est définie par :

  a. $\exists (q, r) \in \mathbb{Z}^2$ tel que $a = bq + r$

  b. $\exists ! (q, r) \in \mathbb{Z}^2$ tel que $a = bq + r$

  c. $\exists ! (q, r) \in \mathbb{Z}^2$ tel que $a = bq + r$ et $r < b$

  d. Aucune des autres réponses

Question 15

On donne l'égalité $4888 = 288 \times 17 - 8$. -8 est le reste de la division euclidienne de 4888 par 17.

  a. vrai

  b. faux

Question 16

Cochez la(les) bonne(s) réponse(s)

  a. $23 \equiv 2\,[11]$

  b. $23^9 \equiv 1\,[11]$

  c. $16 \equiv -6\,[11]$

  d. Aucune des autres réponses

Question 17

Soient $(a, b, c) \in \mathbb{Z}^3$ et $n \in \mathbb{N}^*$. On a

  a. $n \mid a \iff a \equiv 0\,[n]$

  b. $a \mid n \iff a \equiv 0\,[n]$

  c. $a \equiv c\,[n]$ et $b \equiv c\,[n] \implies a = b$

  d. $a \equiv a + n\,[n]$

  e. Aucune des autres réponses

$5 \equiv 1\ [2]$ $7 \equiv 1\ [2]$

Question 18

Soit $(a, b) \in \mathbb{Z}^2$. On note $a \wedge b$ le pgcd de a et de b. On a

   a. $a | a \wedge b$

   b. Soit $d \in \mathbb{Z}$ tel que $d|a$ et $d|b$. Alors $d \leq a \wedge b$.

   c. Si $a = 45$ et $b = 9$ alors $a \wedge b = 3$

   d. Si $a = 45$ et $b = 9$ alors $a \wedge b = 9$

   e. Aucune des autres réponses

Question 19

Cochez le(les) nombre(s) premier(s) :

   a. 2

   b. 5

   c. 9

   d. 21

   e. Aucune des autres réponses

Question 20

Soit $a = 2^4 \times 3^2 \times 5 \times 11$. On a

   a. $27 | a$

   b. $3^4 | a$

   c. $(2 \times 11^2) | a$

   d. $16 | a$

   e. Aucune des autres réponses

3

QCM Electronique – InfoS1

7.

Pensez à bien lire les questions ET les réponses proposées (attention à la numérotation des réponses)

Soit un courant sinusoïdal $i(t) = I.\sqrt{2}.sin\,(\omega t + \varphi)$. On note $\underline{I}$, l'amplitude complexe associée à $i(t)$.(Q21 à 25)   ↑ courant efficace

Q21. Par convention, I est une grandeur réelle quelconque, en Ampère.

    a. VRAI   **b.** FAUX

Q22. Quelle est la valeur efficace de $i(t)$?

    a. ω c. $I.\sqrt{2}$

    b. I d. $\frac{I}{\sqrt{2}}$

2. **Q23.** Que représente ω ?

$\omega = 2\pi f$

    a. la pulsation   rad/s   c. La période $T = \frac{1}{f}$

    b. La fréquence   d. La phase à l'origine

Q24. Que représente I ?

    a. le module de $\underline{I}$ c. la valeur maximale de $i(t)$

    b. l'argument de $\underline{I}$ d. le déphasage de $i(t)$

Q25. Quel est l'argument de $\underline{I}$?

    a. $\omega t + \varphi$ c. ωt

    b. φ d. I

Soit un dipôle D. On note :

- $u(t)$, la tension à ses bornes
- $i(t)$, le courant qui le traverse
- $\underline{Z}$, son impédance complexe.

u et i sont fléchés en respectant la convention récepteur. (Q26&27)

Q26. Quelle est l'unité de $|\underline{Z}|$?

    a. Des Ohms (Ω)

    b. Des Ampères sur des Volts $\left(\frac{A}{V}\right)$

    c. Ça dépend du dipôle

$$\underline{Z} = \frac{\underline{U}}{\underline{I}} \Rightarrow |\underline{Z}| = \frac{|\underline{U}|}{|\underline{I}|} = \frac{U}{I}$$

$$[V/A] = [\Omega]$$

Q27. Que représente l'argument de $\underline{Z}$?

     a. La phase à l'origine de u

     b. La phase à l'origine de i

     c. Le déphasage de u par rapport à i

     d. Ça dépend du dipôle

On considère une résistance R, un condensateur de capacité C et une bobine d'inductance L. (Q28 à 30)

Q28. On associe la résistance et le condensateur en série. Quelle est alors l'impédance complexe équivalente $\underline{Z}$?

$R + \dfrac{1}{jC\omega}$

     a. $\underline{Z} = R + C$

     b. $\underline{Z} = R + jC\omega$

     c. $\underline{Z} = \dfrac{1 + jRC\omega}{jC\omega}$

     d. $\underline{Z} = \dfrac{R}{1 + jRC\omega}$

Q29. On associe la bobine et le condensateur en parallèle. Quelle est alors l'impédance complexe équivalente $\underline{Z}'$?

     a. $\underline{Z}' = \dfrac{1}{L} + \dfrac{1}{C}$

$\dfrac{jL\omega \times \dfrac{1}{jC\omega}}{jL\omega + \dfrac{1}{jC\omega}}$

     b. $\underline{Z}' = \dfrac{jL\omega}{1 - LC\omega^2}$

     ✗ $\underline{Z}' = \dfrac{1}{jL\omega} + jC\omega$

     d. $\underline{Z}' = \dfrac{jC\omega}{1 - LC\omega^2}$

Q30. On associe la bobine et la résistance en parallèle. Quelle est alors l'impédance complexe équivalente $\underline{Z}''$?

     a. $\underline{Z}'' = \dfrac{1}{R} + jL\omega$

     b. $\underline{Z}'' = \dfrac{R}{1 + jRL\omega}$

     c. $\underline{Z}'' = \dfrac{jRL\omega}{R + jL\omega}$

     d. $\underline{Z}'' = \dfrac{1}{R} + \dfrac{1}{L}$

$\dfrac{R \times jL\omega}{R + jL\omega}$

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

Rose Hill Hotel

SEMINAR SCHEDULE – JULY 18, 20__

9:00 – 10:15 am Gardenia Room. New Rules for the Work Force. Cranston Davis, a personnel consultant with Davis & Associates, will lead a discussion on how the rules recently adopted by the Department of Labor will impact small and medium-sized companies.

9:30 – 11:00 am Green Orchid Room. Introduction to Trademarks. Miranda Romero, an attorney with Romero & Brown, will explain the concept of a trademark, and why protecting your company's mark is fundamental to its success.

10:30 – 12:00 pm Blue Rose Room. Make your Advertising Sing! John White, an advertising consultant with Chang & Associates, will provide tips on how to make your Internet advertising stand out from the competition.

12:00 – 1:30 pm Cafeteria. Buffet Lunch.

1:30 pm – 4:00 pm Green Orchid Room. Privacy for All. Concerns about privacy are everywhere. Margaret Bloomstad will lead a presentation on how the company has implemented new privacy protections for our clients, including significant changes to the ways we handle our clients' confidential personal and financial information.

3:30 pm – 4:45 pm Gardenia Room. Sales Retrospective. We all know it's important to gain new customers, but what about meeting additional needs of our existing customer base? Sara Mendez, sales manager for the Rose Hill Hotel, talks about how we can market additional products to clients already on our books, and build upon those relationships already in place.

To: Seminar Planning Committee
From: Sandy Montgomery
Date: June 4, 20__
Re: Seminar Schedule

Hi Team,

I have just reviewed the draft schedule for next month's seminar. Congratulations on putting together such an impressive list of speakers. I heard Cranston Davis speak last month – outstanding. John White was also a speaker for us several years ago, and did an excellent job.

Unfortunately, we're going to have to move things around a bit. The presentation on work force rules is mandatory for everyone, so we can't have that presentation overlap with anything else. I don't think the privacy presentation will take more than 90 minutes, so maybe we can tighten that up a bit. John White also left me a message, and asked if we could move his presentation to the afternoon.

Are there any other issues? Will anyone need any audio-visual equipment? Let me know by the end of the day tomorrow, so we can begin finalizing the arrangements.

Sandy

To: Sandy Montgomery
From: John Forsythe
Date: June 5, 20__
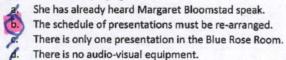**Re:** Seminar Schedule

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Hi Sandy,

Thanks for your memo. I'm not sure how to fix the scheduling problems you noted, but here are some ideas.

Margaret's assistant told me yesterday that Margaret only needs an hour for her presentation, and that she is free any time during the day. What about moving her to the morning, and giving her afternoon time slot to John?

Can we move the presentation on Work Force Rules to the afternoon? Miranda Romero only has the one time slot available for her presentation. We either leave her at 9:30 to 11:00, or we have to find another speaker to replace her. It would be a shame to lose her, in my opinion.

So long as we have a microphone and a projector for presentation slides in each conference room, I don't think we need any other equipment.

Let me know what you think of the proposed schedule changes, when you have a moment. We can also talk about this at the next committee meeting.

John

31. What problem is Sandy trying to solve?
    a. She has already heard Margaret Bloomstad speak.
    b. The schedule of presentations must be re-arranged.
    c. There is only one presentation in the Blue Rose Room.
    d. There is no audio-visual equipment.

32. Who is John Forsythe?
    a. A replacement speaker at the seminar.
    b. An employee of Miranda Romero.
    c. A member of the Seminar Planning Committee.
    d. Manager of the Rose Hill Hotel.

33. What is definitely true about Miranda Romero?
    a. She can give her presentation in the afternoon.
    b. Her presentation is currently at an inconvenient time.
    c. She is an accountant.
    d. Sandy Montgomery has heard her speak before.

34. What presentation must all participants attend?
    a. New Rules for the Work Force.
    b. Introduction to Trademarks.
    c. Privacy for Ali.
    d. Sales Retrospective.

35. Who works for the Rose Hill Hotel?
    a. Sandy Montgomery.
    b. John Forsythe.
    c. Cranston Davis.
    d. Sara Mendez.

Turn to the next page.

THE MORGAN CITY HERALD

Monday, April 16

The State Bureau of Tourism is predicting a banner year. Camping should be more popular than ever, with state parks full every weekend. Beach traffic also should be high, as the summer should be warmer than normal. The increased revenue from tourism is important to the state, and strong tourism seasons have usually resulted in financial boosts to libraries and schools. The state, however, will make its budgeting decisions in the fall.

Date	October 1, 20__
From	Wendy Miller, State Bureau of Tourism
To	Candace Chu, Morgan Consulting
Subject	Summer Data

Hi Candace,

It's time for the annual surveys of tourism industry businesses to see how the summer panned out for everyone. I know our expectations were not met, due to the weather and gas prices. Indeed, I suspect a couple of sectors had seasons that were worse than last year.

We also need to focus on the businesses near the coast. Mark Rogers from the Department of State Parks has already reported disappointing figures for the campgrounds under his jurisdiction; I'm hoping the same is not true for resorts near the water. Diana Suh, my assistant, will also be working with you to make sure everything from our end goes smoothly.

Let me know if you need anything else for your work. I look forward to your report.

Wendy

THE MORGAN CITY HERALD

Wednesday October 31

Weather, High Gas Prices Resulted in Depressed Summer Travel

The State Bureau of Tourism has confirmed what many already knew: the summer was a disappointment. Visits to the state's parks increased by less than one percent, and hotel reservations were down slightly. State economists estimated that tourism added $450 million to the economy, which was barely up from the $445 million earned last year. "It was a rough season," admitted Sandra Mulligan, head of the Bureau.

Several factors contributed to the mediocre tourism season. The summer was unusually cool, with temperatures 3 °C lower than average. As a result, fewer people went to the beach. Gasoline prices were five cents a liter higher than last year, and the high rate of unemployment hampered many people's travel plans. "People decided against the long vacation this year, preferring instead a number of long weekends close to home," said Gordon Anderson, professor of economics at Redman University. Professor Anderson noted that among other things, usage of municipal parks and local pools was up almost eight percent, despite the cooler weather.

36. What does the first article predict?
    a. More traffic jams.
    b. More people camping this year than last.
    c. An increased tax rate.
    d. Setter schools and libraries.

37. Who is Mark Rogers' employer?
    a. The Morgan City Herald.
    b. Redman University.
    c. The Department of State Parks.
    d. Morgan Consulting.

38. According to the second article, what did the State experience?
    a. A decrease in visits to state parks.
    b. A change in the head of the Bureau of Tourism.
    c. Fewer people using local swimming pools.
    d. Cooler than expected weather.

39. In the first article, the word "banner" in line 1 is closest in meaning to:
    a. superb
    b. mediocre
    c. horrific
    d. sub-par

40. What was an effect of the weather this summer in the state?
    a. Fewer people went to the beaches.
    b. Unemployment increased.
    c. Tax revenues stayed the same.
    d. More people took long trips.