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香港國際編程競賽初賽 2019 – 2020 (香港賽區)



HONG KONG INTERNATIONAL COMPUTATIONAL OLYMPIAD

HEAT ROUND 2019 - 2020 (HONG KONG REGION)

Scratch

時限：60 分鐘

Time allowed: 60 minutes

模擬試題

Mock Paper

考生須知：

Instructions to Contestants:

1. 本卷包括 試題 乙份，試題紙不可取走。
Each contestant should have ONE Question-Answer Book which CANNOT be taken away.
2. 本卷共 20 題，答對得 2 分，空題得 0 分，答錯倒扣 1 分。
There are a total of 20 questions in this Question-Answer Book. Two points for correct answers. No points for incorrect answers. **ONE penalty point will be deducted for incorrect answers.**
3. 請將答案寫在 答題紙 上。
All answers should be written on ANSWER SHEET.
4. 比賽期間，小學組不得使用計算工具，中學組可以使用計算工具。
During the contest, NO calculators can be used for PRIMARY GROUP but calculators can be used for SECONDARY GROUP.
5. 本卷中所有圖形不一定依比例繪成。
All figures in the paper are not necessarily drawn to scale.
6. 比賽完畢時，本試題會被收回。
This Question-Answer Book will be collected at the end of the contest.

本試題不可取走。

THIS Question-Answer Book CANNOT BE TAKEN AWAY.

未得監考官同意，切勿翻閱試題，否則參賽者將有可能被取消資格。

請將答案寫在

答題紙

 上。

All answers should be written on the ANSWER SHEET.

DO NOT turn over this Question-Answer Book without approval of the examiner.
Otherwise, contestant may be DISQUALIFIED.

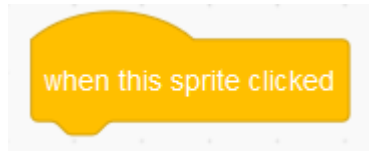
請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

選擇題 (第 1 至 20 題) (答對得 2 分, 空題得 0 分, 答錯倒扣 1 分)

Multiple Choice Questions (1st ~20th) (Two points for correct answers. No points for incorrect answers. **ONE penalty point will be deducted for incorrect answers.**)

1. Building blocks in Scratch are divided into many categories, for example, Motion, Events, Operators. Which category does the following block belong to?

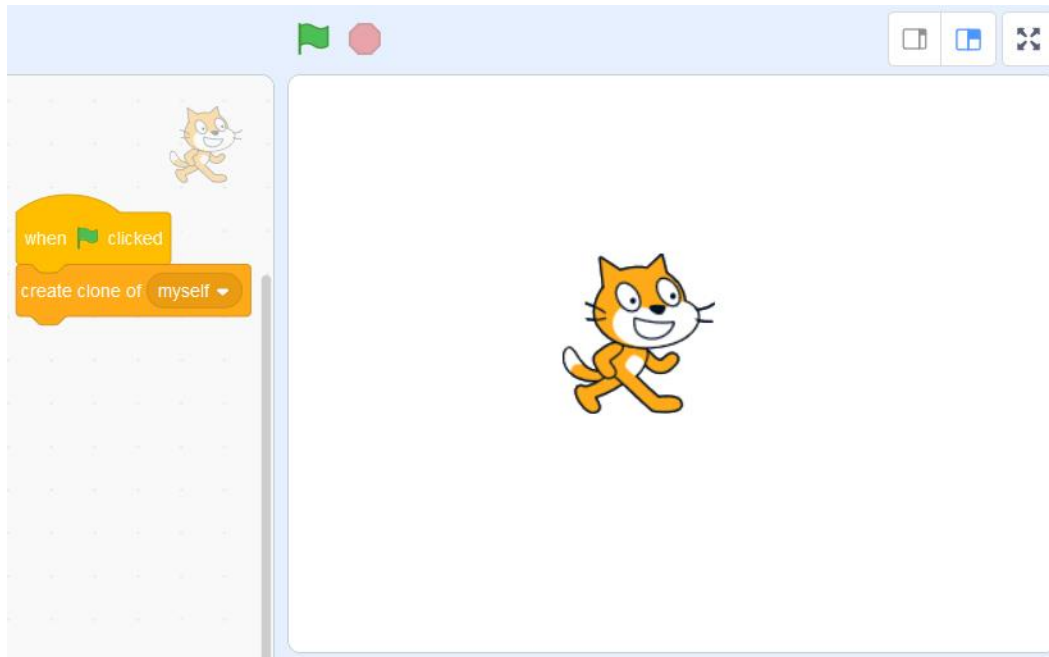


- A. Motion B. Events C. Operators D. Sensing E. Control
2. The Scratch project has received financial support from the following organizations: National Science Foundation, Scratch Foundation, Siegel Family Endowment, Google, LEGO Foundation, Intel, Cartoon Network, Lemann Foundation, MacArthur Foundation. The Scratch project is under direct maintenance by which of the following organization?
- A. Lifelong Kindergarten Group
- B. MIT Physics Faculty
- C. Google
- D. Intel
- E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

3. Referring to the script and scene below, why is the clone not seen after clicking the green flag?

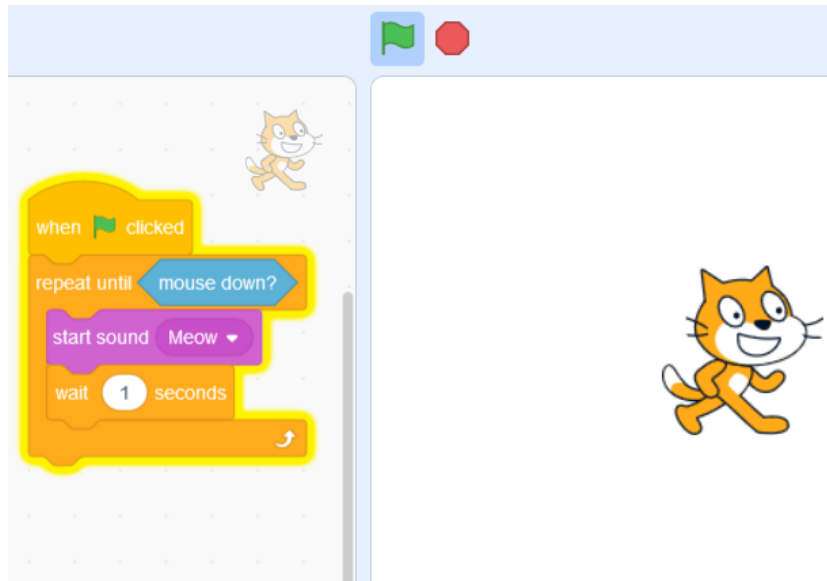


- A. Clone is not created
- B. The script is not executed
- C. The clone overlap with the original
- D. The clone is spawn outside of the scene
- E. None of the above

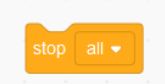
請將答案寫在 **答題紙** 上。

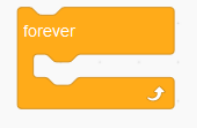
All answers should be written on the ANSWER SHEET.

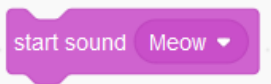

4. Given the following scene

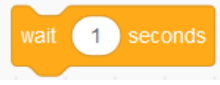


Why doesn't the cat stop "meowing" even after the mouse was clicked once? Or how should it be fixed?

A.  should be put at the bottom of the script

B. "Repeat until" should be replaced by 

C.  should be put under 

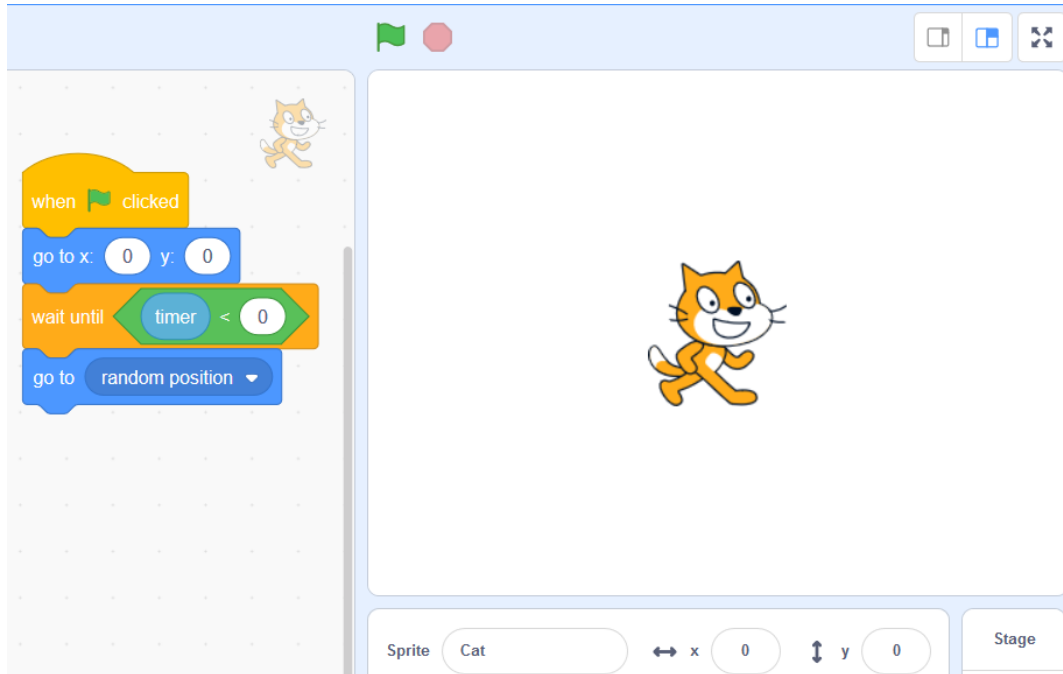
D. Mouse down event is not captured during 

E. None of the above


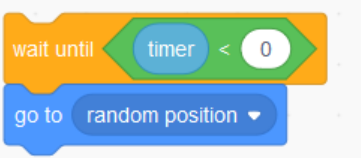

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

5. Given the following scene



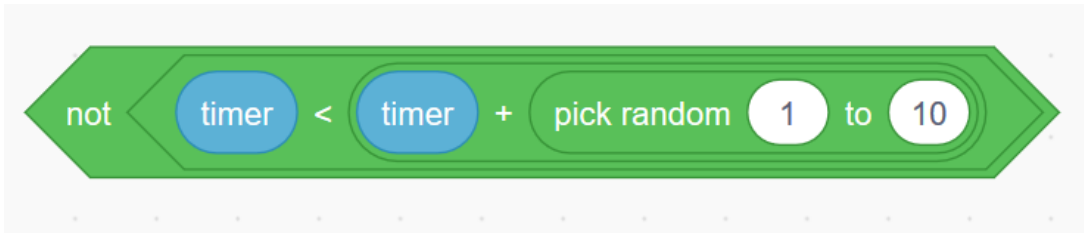
Why does the sprite “Cat” not appear moving to random position after the green flag was clicked? Or how should it be fixed?

- A.  should be removed
- B.  should be replaced by 
- C. “Go to random position” should be set to “go to (123, 456)”
- D. All of the above
- E. None of the above

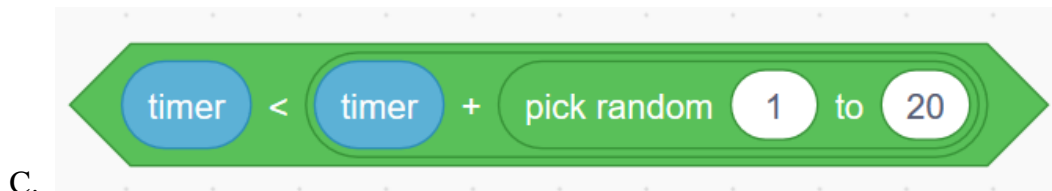
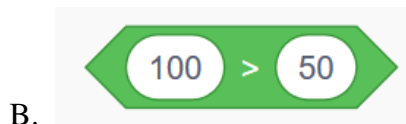
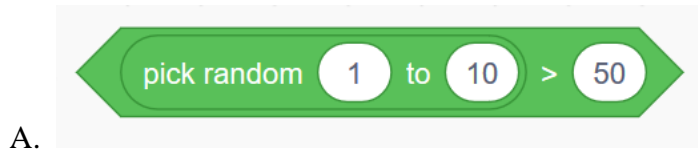
請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

6. Given the operator



Which of the following is equivalent to the above one when putting inside the “if” block?



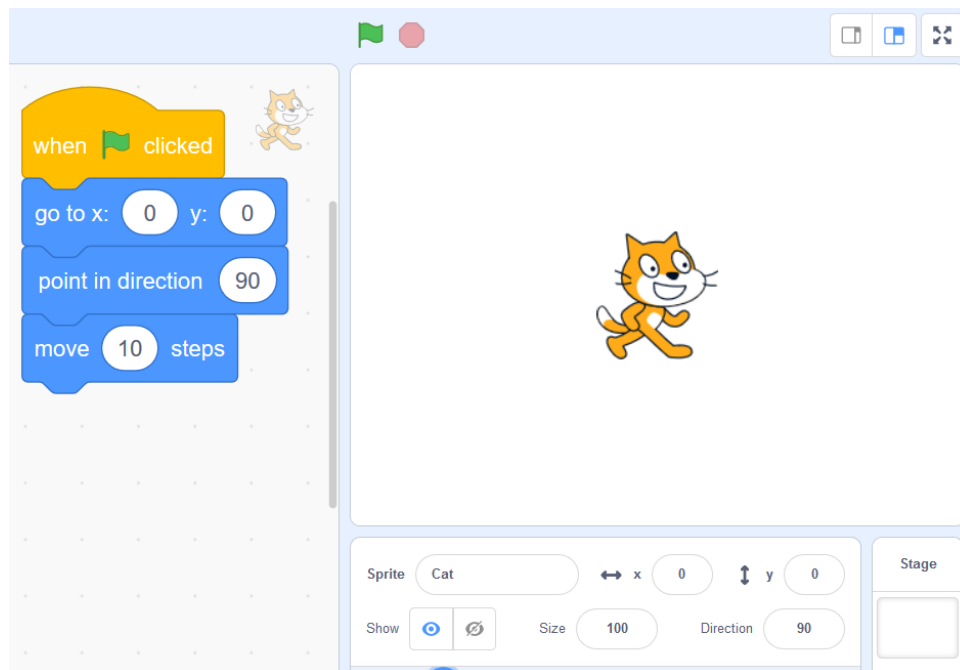
D. All of the above

E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

Refer to the following scene and script for question 7 and 8.

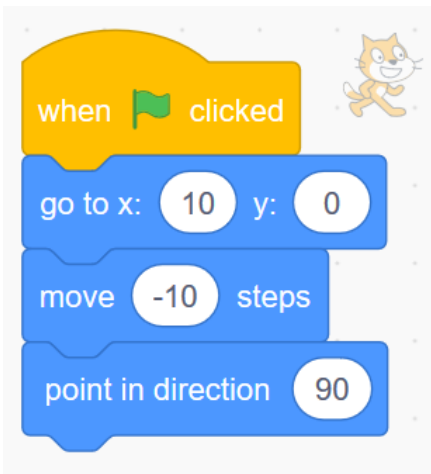


7. What is the cat's position after clicking the green flag?
- A. (0, 10)
 - B. (90, 10)
 - C. (90, 0)
 - D. (10, 0)
 - E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

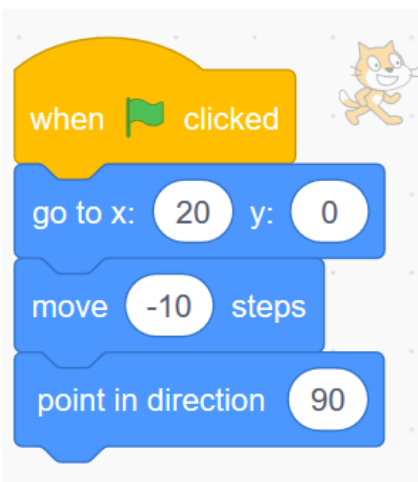
8. Which of the following script gives the same final outcome as the above script and scene?



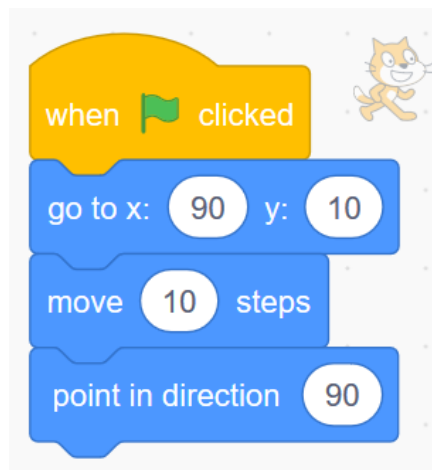
A.



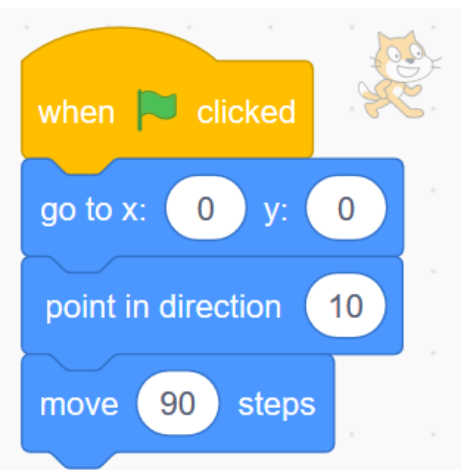
B.



C.



D.

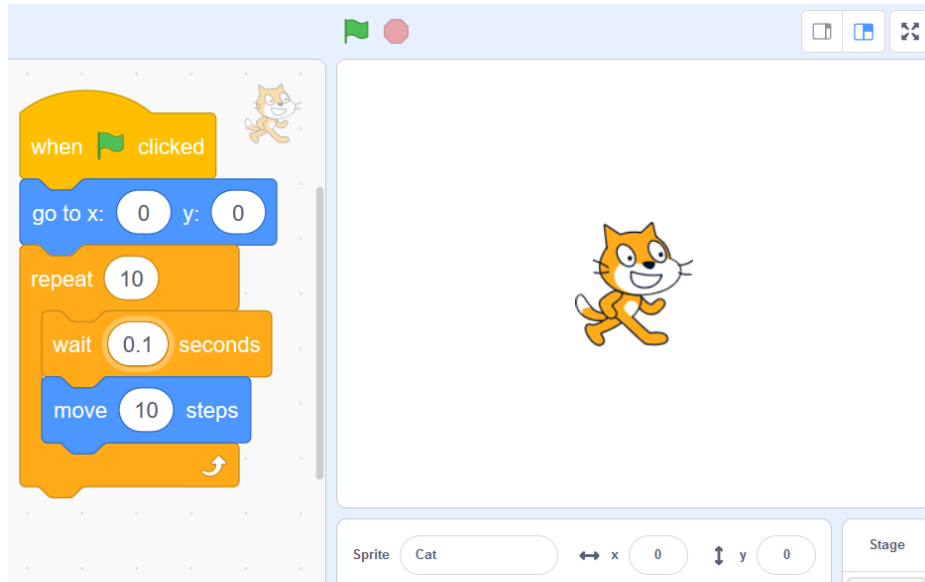


E.

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

9. Given the following scene

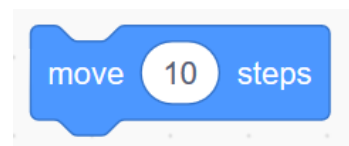


After the green flag is clicked, the cat would move gradually from (0, 0) to (100, 0). Which of the following can slow down its speed?

A. Increase the cat's weight by adding more script blocks



B. Add one more directly below



C. Reduce the number of repeating times from 10 to 2

D. Set the initial position to (-100, 0)

E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

10. Given the cat is initially at (0, 0), which of the following script is equivalent as

```
when green flag clicked
repeat (10)
  wait (0.1) seconds
go to x: 100 y: 0
```

A.

```
when green flag clicked
wait (0.1) seconds
repeat (10)
  go to x: 100 y: 0
```

B.

```
when green flag clicked
go to x: 100 y: 0
repeat (10)
  wait (0.1) seconds
```

C.

```
when green flag clicked
go to x: 100 y: 0
wait (0.1) seconds
```

D.

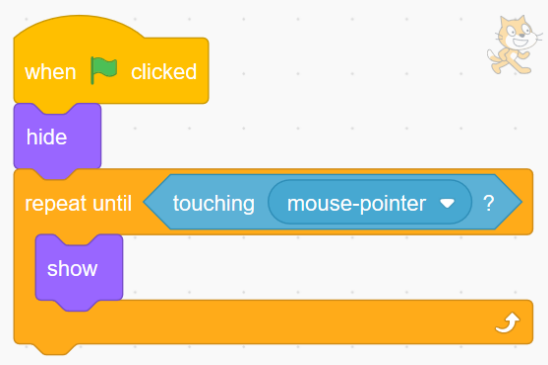
```
when green flag clicked
wait (10) seconds
go to x: 100 y: 0
```

E. None of the above

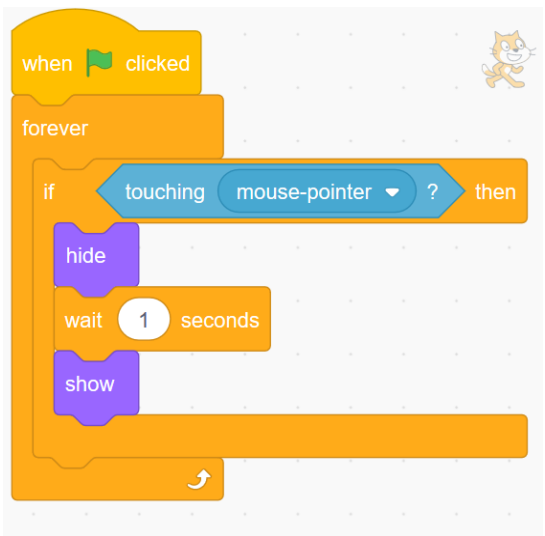
請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

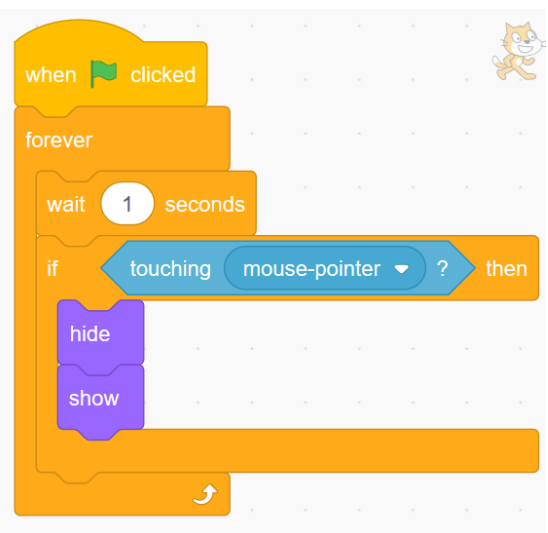
11. Which of the following is the correct script so that the cat would hide when touching the mouse pointer but reappear after 1 second? (You can assume that the green flag is clicked)

A. 

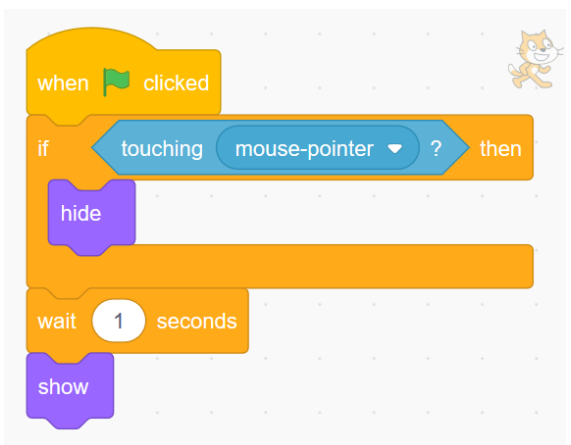
```
when green flag clicked
hide
repeat until touching mouse-pointer
show
```

B. 

```
when green flag clicked
forever
if touching mouse-pointer then
hide
wait 1 seconds
show
```

C. 

```
when green flag clicked
forever
wait 1 seconds
if touching mouse-pointer then
hide
show
```

D. 

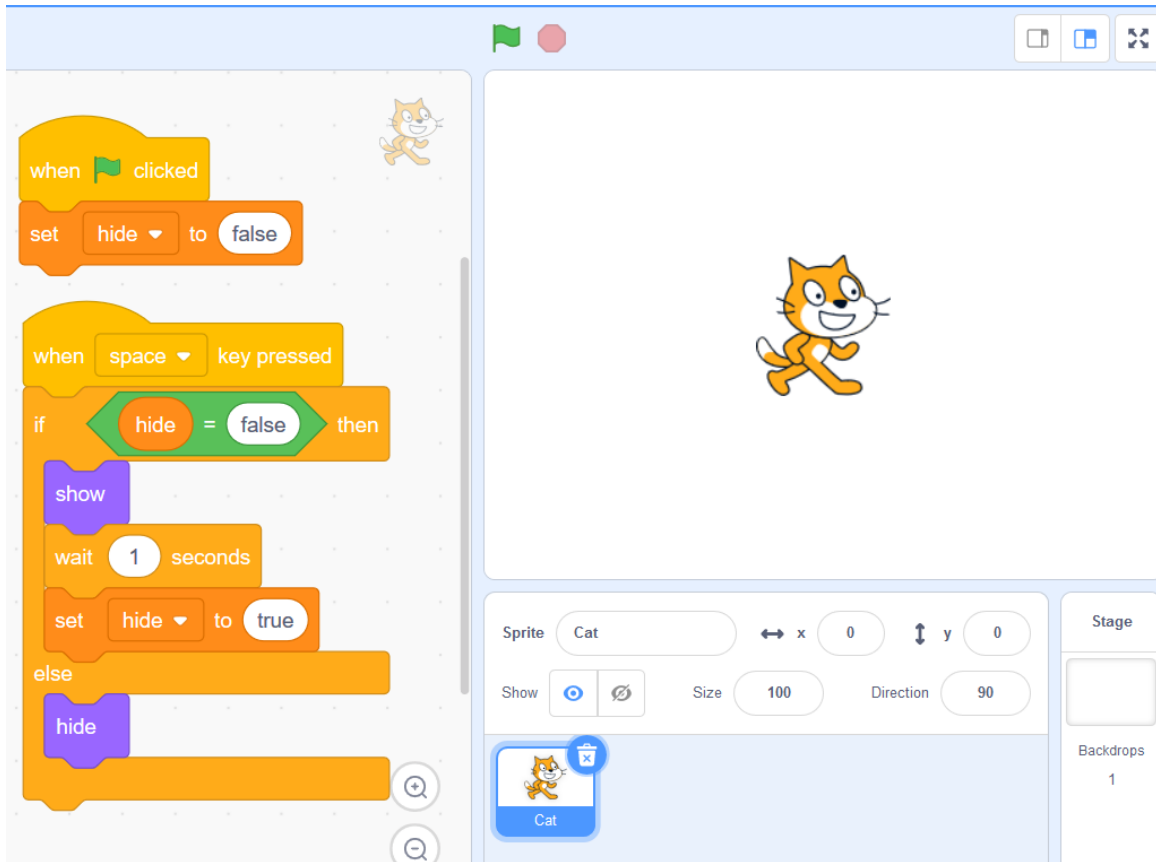
```
when green flag clicked
if touching mouse-pointer then
hide
wait 1 seconds
show
```

E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

Refer to the following scene for questions 12 - 14

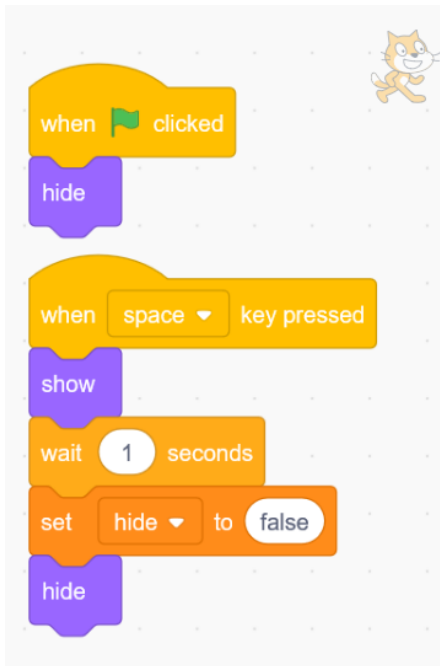


12. A student wants the cat to show 1 second then hide again every time the spacebar is pressed. The student supposes the cat would hide 1 second after clicking the space because he/she does set variable “hide” to “true”, but in fact the cat doesn’t hide 1 second after space is clicked. Why doesn’t the cat hide 1 second after the spacebar is clicked?
- A. IF-block and IF-Else-block are misplaced
 - B. Variable “hide” is set to true again after showing
 - C. Block “hide” should be put at the end of if-block
 - D. Block “hide” should be put after if-block, “show” should be put inside else-block
 - E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

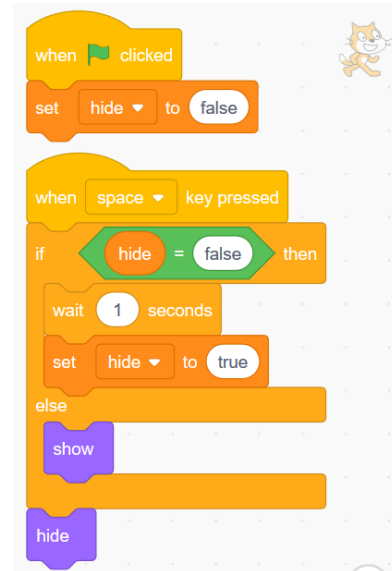
13. Which of the following script achieves the expected result (show for one second then hide again when the spacebar is pressed)?



Scratch script A:

- when green flag clicked
- hide
- when space key pressed
- show
- wait 1 seconds
- set hide to false
- hide

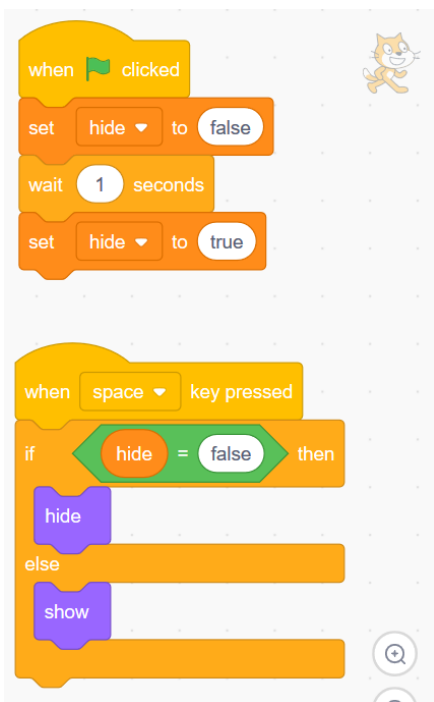
A.



Scratch script B:

- when green flag clicked
- set hide to false
- when space key pressed
- if hide = false then
- wait 1 seconds
- set hide to true
- else
- show
- hide

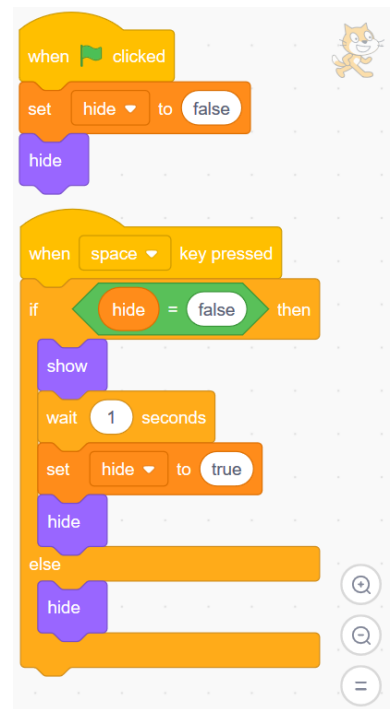
B.



Scratch script C:

- when green flag clicked
- set hide to false
- wait 1 seconds
- set hide to true
- when space key pressed
- if hide = false then
- hide
- else
- show

C.



Scratch script D:

- when green flag clicked
- set hide to false
- hide
- when space key pressed
- if hide = false then
- show
- wait 1 seconds
- set hide to true
- hide
- else
- hide

D.

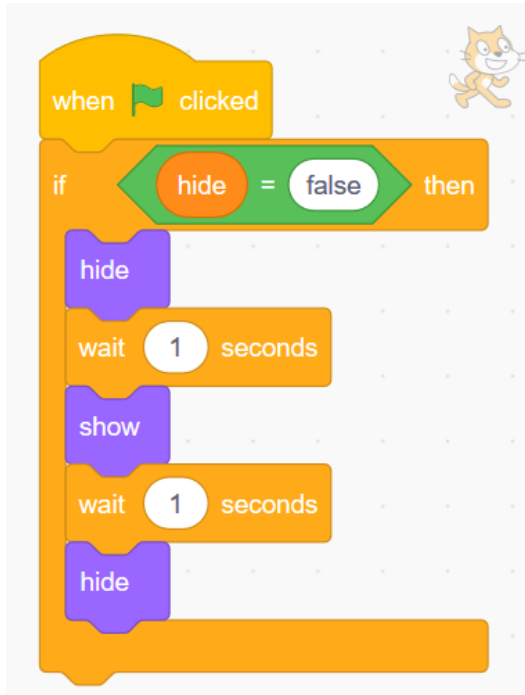
E. None of the above

請將答案寫在 **答題紙** 上。

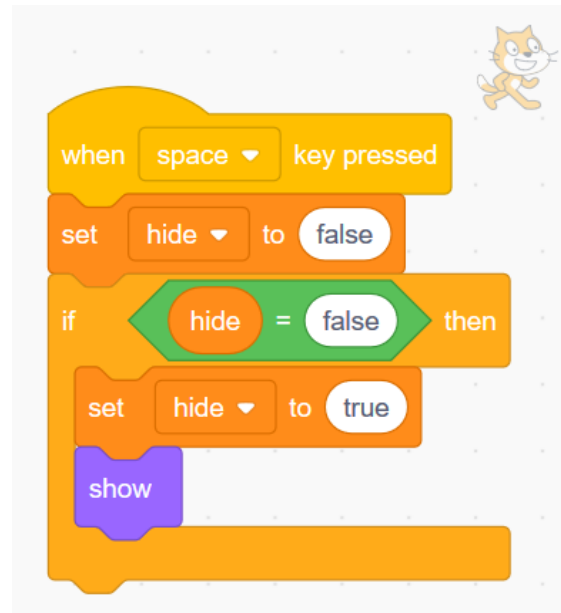
All answers should be written on the ANSWER SHEET.

14. Later the student discusses this with his/her friend, who comes up with the left script, whereas the student comes up with the right script. Who is / are correct?

By the friend



By the student

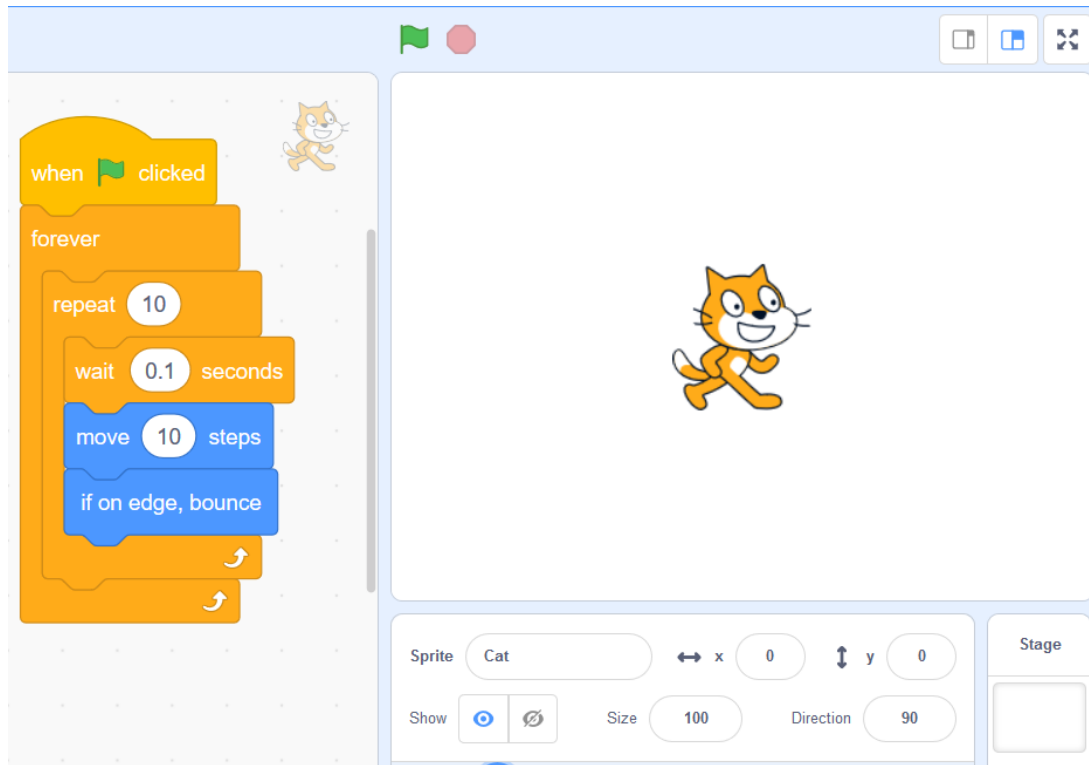


- A. The friend is correct, the student is not
- B. The friend is not correct, the student is
- C. Both are correct
- D. Both are not correct
- E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

Refer to the following scene for question 15 - 17

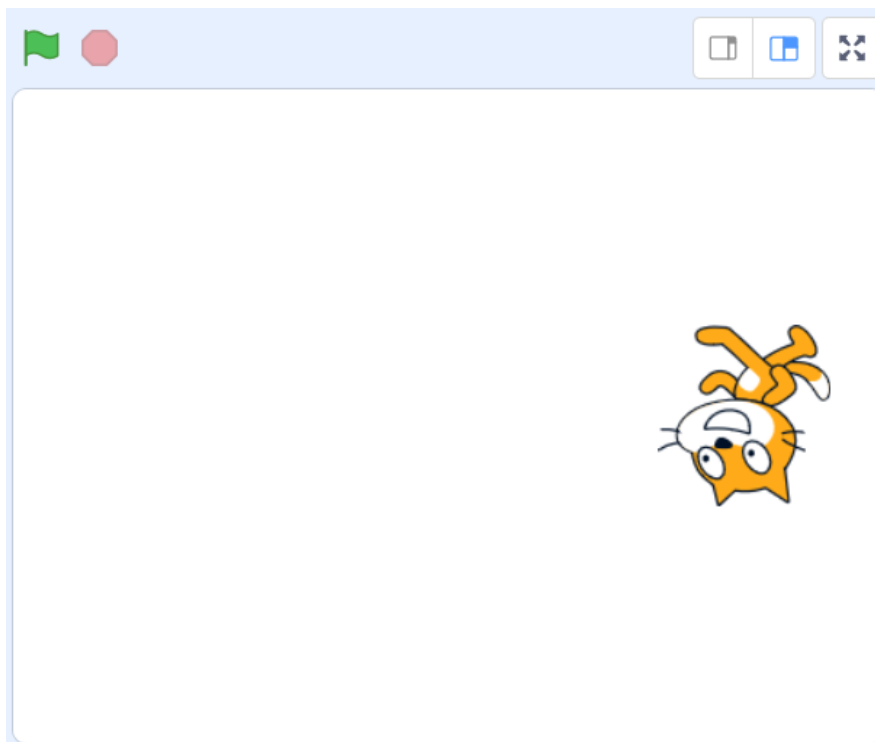


15. A student wants the cat to bounce in the scene back and forth. His/her teacher says that the script is not correct. Which of the following statement is true?
- A. The teacher is wrong
 - B. 0.1 seconds is too low
 - C. The student should use “move to (0, 0)” inside the loop
 - D. Block “forever” could be removed
 - E. None of the above

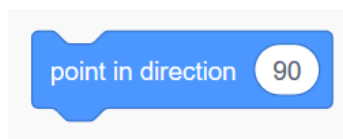
請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

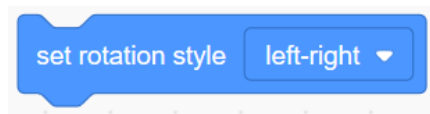
16. After running for a while (and fixed the script), the cat looks like this



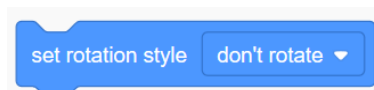
The student does not want the cat go upside down and wants it to face the its running direction, what should he / she do?



- A. Set direction to 90 inside the loop:
- B. Move the cat by lesser amount inside the loop
- C. Feed the cat



D. Set rotation style to “left-right”:

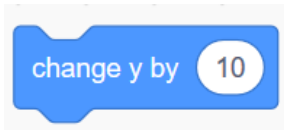


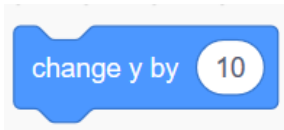
E. Set rotation style to “don't rotate”:

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

17. What could the student do if he/she wants the cat to bounce vertically too?

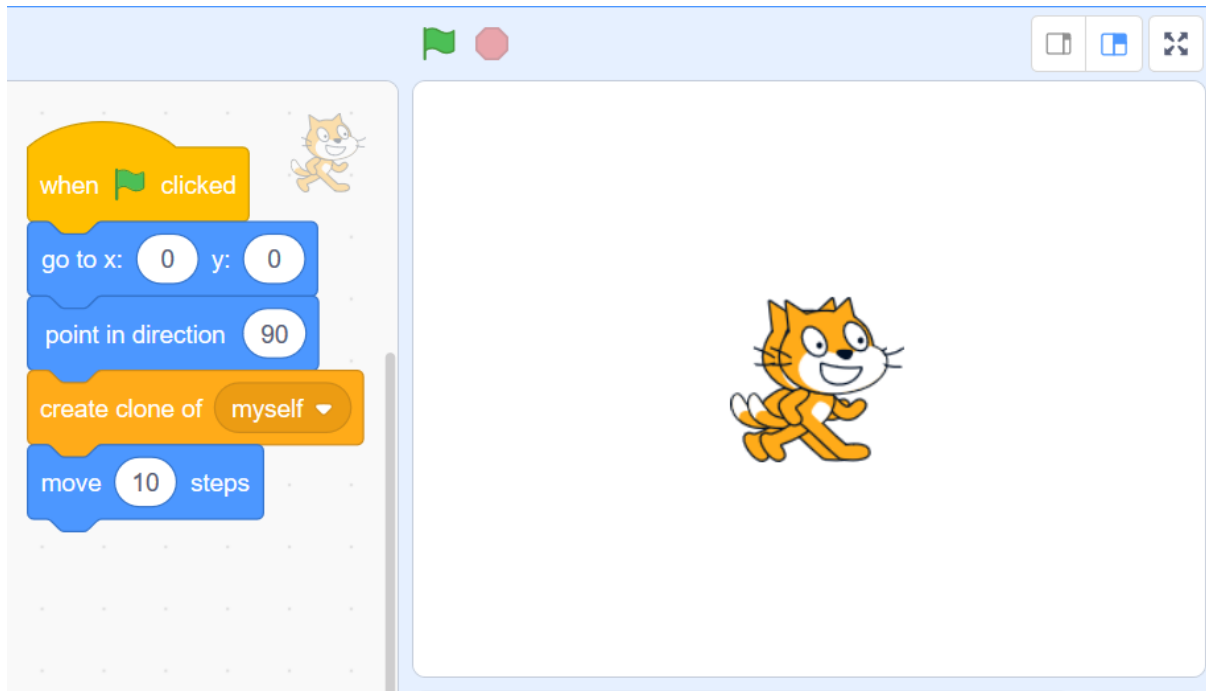


- A. Add  inside the loop
- B. No further step is required
- C. Set the cat's position to well-designed variables, which check against edges
- D. Feed the cat
- E. None of the above

請將答案寫在 **答題紙** 上。

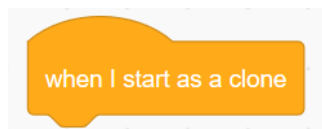
All answers should be written on the ANSWER SHEET.

Refer to the following scene and script for question 18 - 20



18. A student wants the cat to move by 10 steps every time the green flag is clicked, and leave traces of clones behind, but instead he/she only gets the two cats shown in the above scene. Which of the following statement is correct?

- A. The script can be corrected by putting everything inside a forever loop (assuming no content is changed)
- B. "Move 10 steps" should be put above "create clone"
- C. "Go to (0, 0)" should be removed

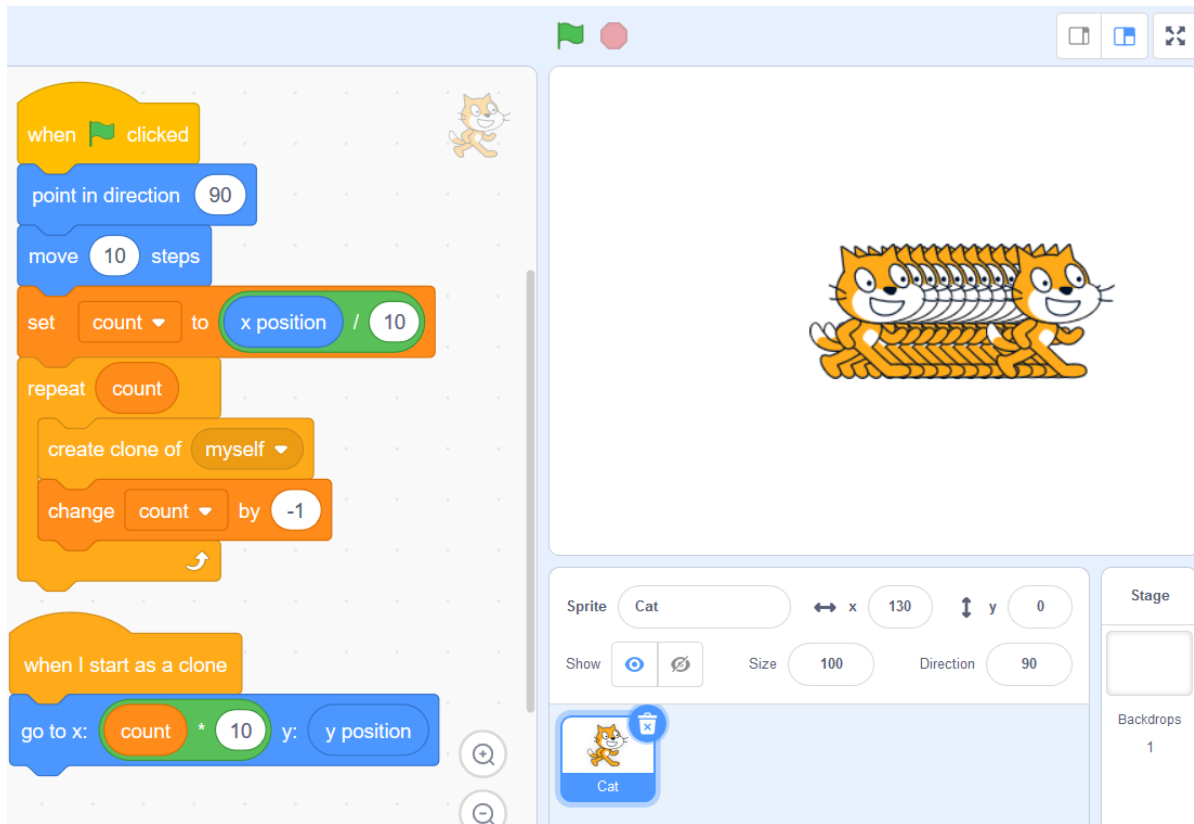


- D. Go to (0, 0) should be put under
- E. None of the above

請將答案寫在 答題紙 上。

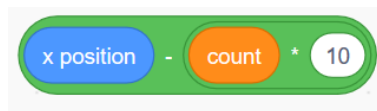
All answers should be written on the ANSWER SHEET.

19. Later the student changes the script as the following and gets the result shown in the following scene



He / She wants each trace of cat to be covered by those on the right instead, what could he / she do?

- A. Add “x position -” to “count * 10”:
- B. Remove all the clones on the left
- C. Communicate with and feed the cat



- D. Use “repeat until count = 0” instead of “repeat count”
- E. None of the above



請將答案寫在

答題紙

 上。

All answers should be written on the ANSWER SHEET.

20. Which of the following is a correct statement regarding question 18 and 19?
- A. What the student is trying to achieve is impossible
 - B. Making errors is unavoidable sometimes in making scratch
 - C. The student should try to use scratch on tablet because scratch on tablet is smarter than on desktop
 - D. Operators blocks are useless
 - E. None of the above

~ 全卷完 ~
~ End of Paper ~