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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)

Blocky

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. Which of the following block categories does not exist in Blockly?

- A. Lists
- B. Loops
- C. Games
- D. Color
- E. None of the above

2. What is Blockly maintained by?

- A. Your school
- B. Youtube
- C. Netflix
- D. Google
- 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 code for question 3 to 5

```
set Count to 0
repeat 5 times
do change Count by 2
print Count
```

3. What is the expected output?

- A. 0
- B. 2
- C. 5
- D. 10
- E. None of the above

4. What does the gap shown in the red circle below suggest?

```
set Count to 0
repeat 5 times
do change Count by 2
print Count
```

- A. More blocks can be filled in place
- B. Blockly has an error
- C. The two blocks doesn't match
- D. Meaningless
- E. None of the above

5. What is “Count”?

- A. Counting how many times the green loop repeats
- B. A variable
- C. 0, it is always 0
- D. Counting how many blocks in the code
- E. None of the above

請將答案寫在 答題紙 上。

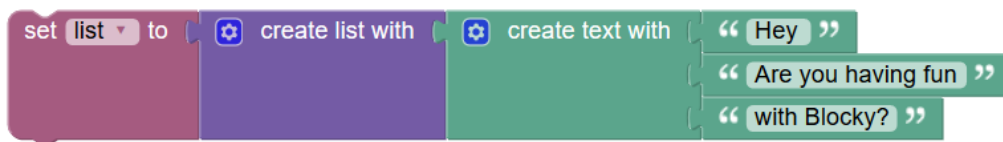
All answers should be written on the ANSWER SHEET.

Refer to the following block, and respective code for question 6 to 10



```
1 var list;  
2  
3  
4 list = ['Hey ', 'Are you having fun ', 'with Blocky?'];  
5 window.alert(list[1].length);
```

6. Is the following list the same as the above? If not, where is the difference?

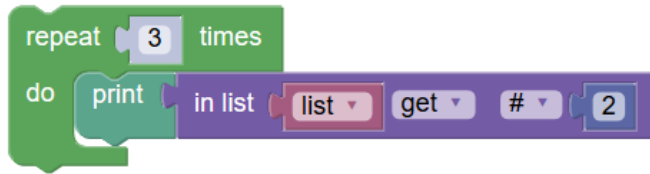


- A. Yes, they are the same
 - B. No, this list has only one element
 - C. No, this list contains more text blocks
 - D. No, this list does not have print
 - E. None of the above
7. What is the message in “window.alert”? (It is equivalent to the content of print)
- A. Hey
 - B. 2
 - C. 3
 - D. 19
 - 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 code can print all of the values of the list in a single line?



```
repeat 3 times
do print in list list get # 2
```

A.



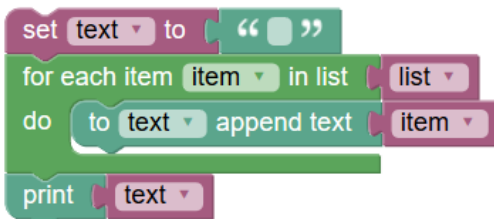
```
print create text with
in list list get # 0
in list list get # 1
in list list get # 2
```

B.



```
count with i from 1 to 3 by 1
do print in list list get # i
```

C.



```
set text to ""
for each item item in list list
do to text append text item
print text
```

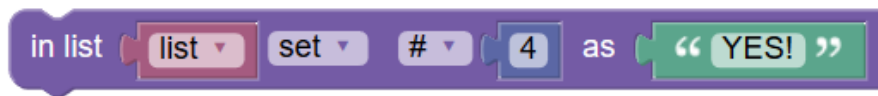
D.

E. None of the above

請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

9. Continuing on question 8, What is the line of output if the following block is added before printing?



- A. Hey Are you having fun with Blocky? YES!
- B. Hey Are you having fun YES!
- C. Hey Are you having fun with Blocky? YES!
- D. Hey Are you having fun with Blocky? 3 YES
- E. None of the above

10. What is the value of the block?



- A. Hey
- B. 0
- C. 4
- D. Are you having fun
- E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

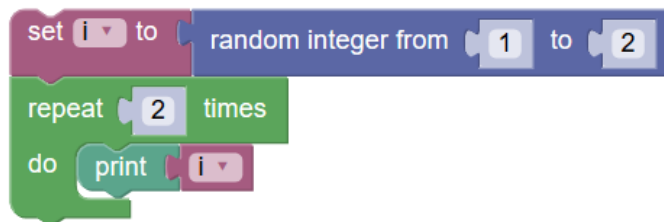
11. What would be printed? Why?



The code block consists of a 'print' block followed by an equals sign. The left side of the equals sign is 'length of' with a text input field containing 'abc'. The right side is 'random integer from' with two numeric input fields, both containing '3'.

- A. false, because nothing would equal to a random integer
- B. false, because random integer from 3 to 3 would cause error
- C. true, because length of abc is 3
- D. true, because length of string equals to a number in every condition
- E. None of the above

12. Refer to the following code, the first line of output is 2

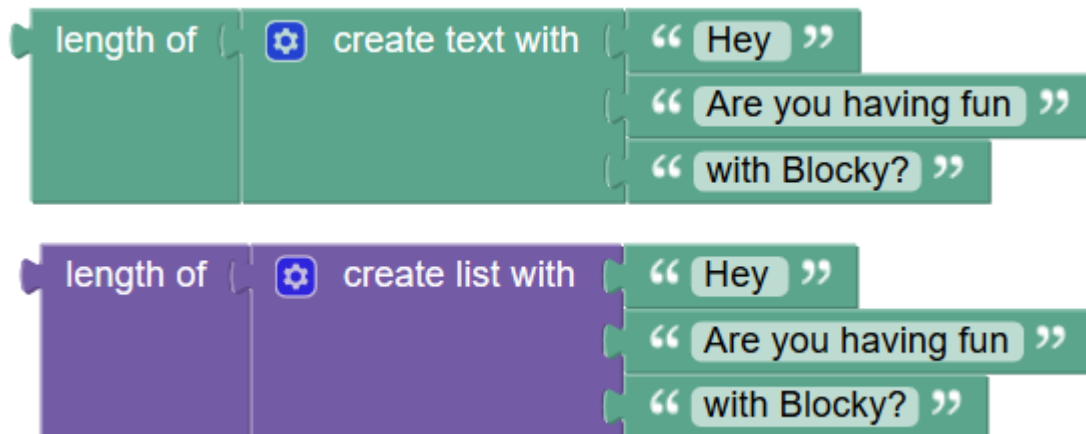


The code block starts with a 'set i to' block where 'i' is a dropdown menu and the value is 'random integer from' with two numeric input fields containing '1' and '2'. This is followed by a 'repeat' block with a numeric input field containing '2' and the word 'times'. Inside the repeat block is a 'do' block containing a 'print' block with a dropdown menu set to 'i'.

What is the second line of output? Why?

- A. 好似漏咗啲野. Because random integer would not repeat
- B. Undetermined because random integer cannot be predicted (easily)
- C. 2 because i is 2
- D. 2 because this is the second time the loop repeats
- E. None of the above

13. Is the value of the following two blocks equivalent? Why?



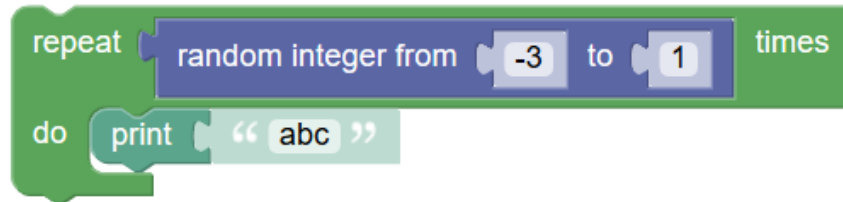
The first block is green and contains 'length of' followed by a 'create text with' block. The 'create text with' block has three text input fields containing 'Hey', 'Are you having fun', and 'with Blocky?'. The second block is purple and contains 'length of' followed by a 'create list with' block. The 'create list with' block has three text input fields containing 'Hey', 'Are you having fun', and 'with Blocky?'.

- A. Yes, they are both 3
- B. Yes, they have the same content
- C. No, length of a list would never equal to length of a text
- D. No, length of list is 3 but length of text does not equal to 3
- E. None of the above

請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

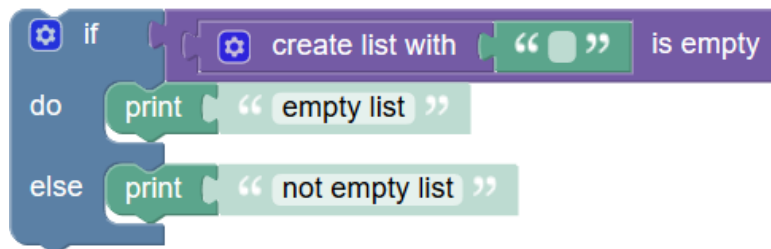
14. The following code is executed but there is no output, why?



```
repeat 1 times
  random integer from -3 to 1
do
  print "abc"
```

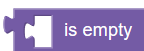
- A. Picking random integer from a negative range causes error in Blockly
- B. The content for printing is not defined
- C. Repeat 1 time is never happening because “random integer from -3 to 1” is exclusive
- D. Value smaller than 1 is picked
- E. None of the above

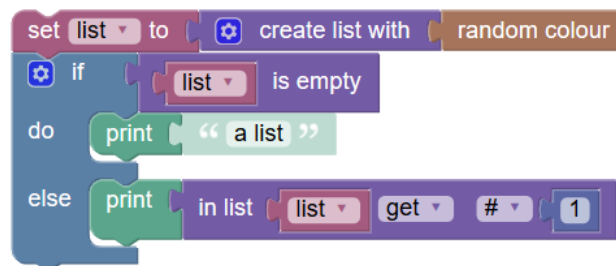
15. What would be printed with the following code executed?



```
if create list with " " is empty
do
  print "empty list"
else
  print "not empty list"
```

- A. Empty list
- B. Not empty list
- C. Undetermined because value of list is unknown
- D. Nothing would be printed
- E. None of the above

16. Can  be removed in the following code to get the same result? Why?



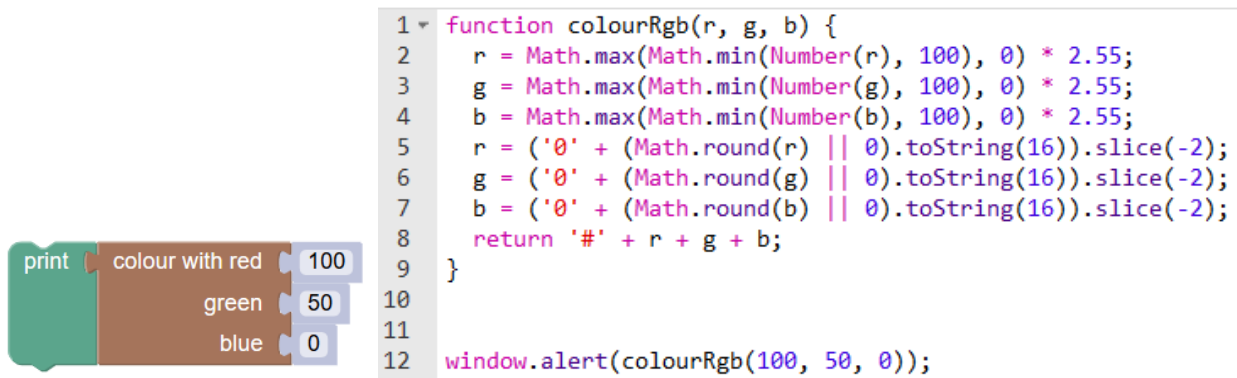
```
set list to create list with random colour
if list is empty
do
  print "a list"
else
  print in list list get # 1
```

- A. Yes, if the block can check list’s emptiness directly
- B. Yes, list is empty anyway
- C. The code produces error because list cannot contain random colour
- D. No, because print “a list” does not print the variable “list”
- E. None of the above

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

17. Following is a block and the respective code



The image shows a Scratch 'print' block with three input fields: 'colour with red' containing '100', 'green' containing '50', and 'blue' containing '0'. To the right is a JavaScript code block with the following content:

```
1 function colourRgb(r, g, b) {
2   r = Math.max(Math.min(Number(r), 100), 0) * 2.55;
3   g = Math.max(Math.min(Number(g), 100), 0) * 2.55;
4   b = Math.max(Math.min(Number(b), 100), 0) * 2.55;
5   r = ('0' + (Math.round(r) || 0).toString(16)).slice(-2);
6   g = ('0' + (Math.round(g) || 0).toString(16)).slice(-2);
7   b = ('0' + (Math.round(b) || 0).toString(16)).slice(-2);
8   return '#' + r + g + b;
9 }
10
11
12 window.alert(colourRgb(100, 50, 0));
```

What is the output?

- A. No output because color cannot be printed
 - B. 100 50 0
 - C. #100500
 - D. #ff7f00
 - E. None of the above
18. What is expected output of the following block? (Assume the underlying language is Javascript)



The image shows a Scratch 'print' block containing a 'create text with' block and a 'create list with' block. The 'create text with' block has the text 'item 1'. The 'create list with' block has two input fields: the first contains '2' and the second contains '1 + 2'.

- A. No output because the list contains elements of different types
- B. No output because the list contains expressions
- C. 1, 2, 3
- D. item 1, 2, 3
- 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. Which of the following is a correct description of the code below?

```
to say that's great
  print "That's great!"
end

if (prompt for text with message "Hi, how are you?" = "I am fine")
  do
    say that's great
  end
end
```

- A. User would be prompted with “Hi, how are you?”, if the user replied with “I am fine”, “That’s great” would be printed
- B. User would be prompted with “That’s great”, if the user continues to ask “Hi, how are you?”, “I am fine” would be printed.
- C. This code produces error because invalid code blocks are used, and the function name cannot contains non-alphabetical symbols too
- D. User would be prompted with “Hi, how are you?” and nothing more because ‘=’ cannot be used with string but only with numbers
- E. None of the above

20. What is the output of the following code? (Assume the underlying language is Javascript)

```
print sum of list
create list with
  5 + 13
  3 - 6
  "3"
```

- A. 13
- B. 18
- C. 21
- D. 153
- E. None of the above

~ 全卷完 ~
~ End of Paper ~