

Functions Part 1 Challenge-The Karel Robot

Open this site.

<https://stanford.edu/~cpiech/karel/ide.html>

```
set world 5x5
```

```
/**
```

```
 * Welcome to the Stanford Karel IDE.
```

```
 * This is a free space for you to
```

```
 * write any Karel program you want.
```

```
 **/
```

```
function main(){
```

```
    goInCircle();
```

```
    goInCircle();
```

```
}
```

```
//Function
```

```
function goInCircle(){
```

```
    move();
```

```
    turnLeft();
```

```
    move();
```

```
    turnLeft();
```

```
}
```

```
//See reference on right side top
```

Built-in Karel commands:

```
move();
turnLeft();
putBeeper();
pickBeeper();
```

Karel program structure:

```
/*
 * Comments may be included anywhere in
 * the program between a slash-star and
 * the corresponding star-slash characters.
 */
```

```
function main () {
    statements in the body of the method
}
```

definitions of helper functions

```
main();
```

Conditional statements:

```
if (condition) {
    statements executed if condition is true
}
```

```
if (condition) {
    statements executed if condition is true
} else {
    statements executed if condition is false
}
```

Iterative statements:

```
for (int i = 0; i < count; i++) {
    statements to be repeated
}
```

```
while (condition) {
    statements to be repeated
}
```

Method definition:

```
function name () {
    statements in the function body
}
```

Karel condition names:

```
frontIsClear()    frontIsBlocked()
leftIsClear()     leftIsBlocked()
rightIsClear()    rightIsBlocked()
beepersPresent() noBeepersPresent()
beepersInBag()   noBeepersInBag()
facingNorth()    notFacingNorth()
facingEast()     notFacingEast()
facingSouth()    notFacingSouth()
facingWest()     notFacingWest()
```

New commands:

```
turnRight();
turnAround();
paintCorner(color);
```

New conditions:

```
random()
random(p)
```

```
/**
```

```
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```

```
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```

```
* write any Karel program you want.
```

```
**/
```

```
function main(){
```

```
    moveFourTimes();
```

```

turnLeft();
moveFourTimes();
}

```

```
//Function
```

```

function moveFourTimes(){
    move();
    move();
    move();
    move();
}

```



```

/**
 * Welcome to the Stanford Karel IDE.
 * This is a free space for you to
 * write any Karel program you want.
 */
function main(){
    putBeeper();

```

```
    move();  
}
```

```
/**
```

```
 * Welcome to the Stanford Karel IDE.
```

```
 * This is a free space for you to
```

```
 * write any Karel program you want.
```

```
 **/
```

```
function main(){
```

```
    diagonalMoveAndBeeper();
```

```
    diagonalMoveAndBeeper();
```

```
    diagonalMoveAndBeeper();
```

```
    diagonalMoveAndBeeper();
```

```
}
```

```
//Function
```

```
function diagonalMoveAndBeeper(){
```

```
    move();
```

```
    turnLeft();
```

```
    move();
```

```
    putBeeper();
```

```
    turnRight();
```

```
}
```

```
/**
```

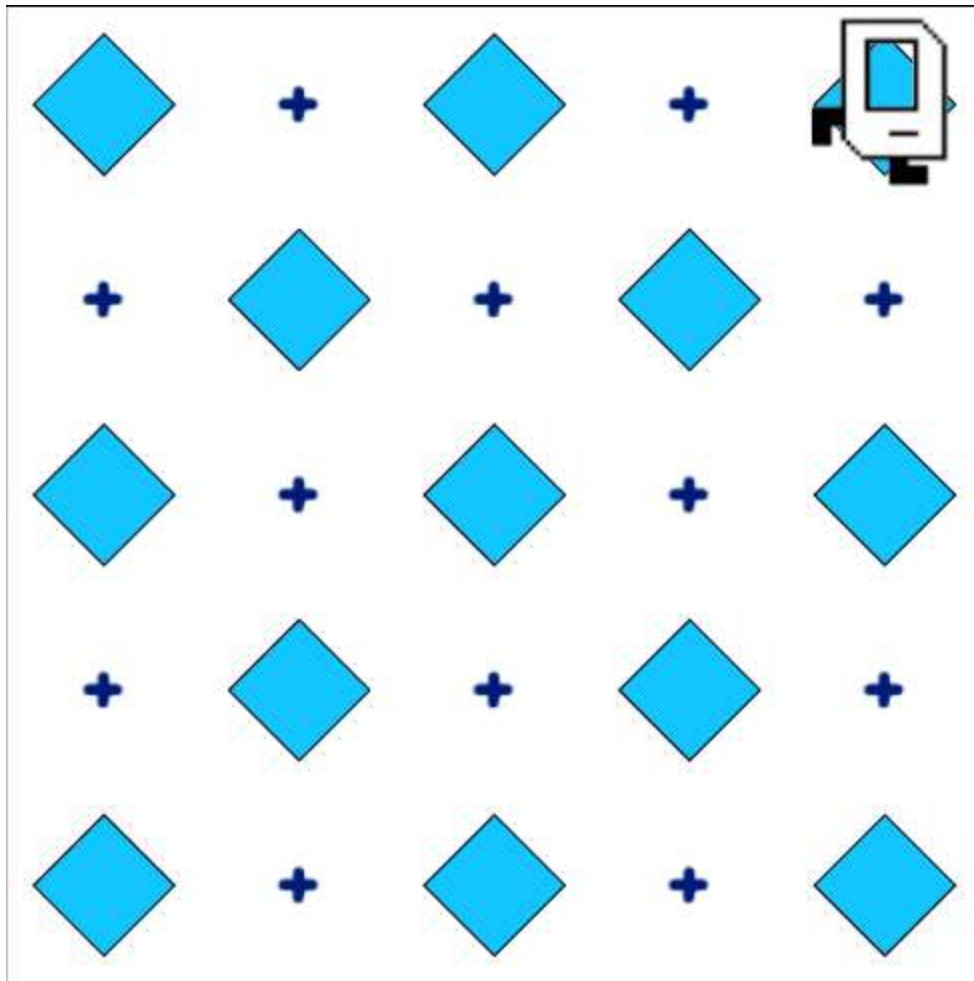
```
 * Welcome to the Stanford Karel IDE.
```

```
* This is a free space for you to  
* write any Karel program you want.  
**/
```

```
function main(){  
    putBeeper();  
    diagonalMoveAndBeeper();  
    diagonalMoveAndBeeper();  
    diagonalMoveAndBeeper();  
    diagonalMoveAndBeeper();  
}
```

```
//Function
```

```
function diagonalMoveAndBeeper(){  
    move();  
    turnLeft();  
    move();  
    putBeeper();  
    turnRight();  
}
```



Solve above challenge

Solution:

```
/**  
 * Welcome to the Stanford Karel IDE.  
 * This is a free space for you to  
 * write any Karel program you want.  
 **/  
  
function main(){  
  beepersRight();  
  goUpTurnLeft();  
  beepersLeft();  
  goUpTurnRight();
```

```
    beepersRight();  
    goUpTurnLeft();  
    beepersLeft();  
    goUpTurnRight();  
    beepersRight();  
}
```

```
function goUpTurnRight() {  
    turnRight();  
    move();  
    turnRight();  
}
```

```
function goUpTurnLeft() {  
    turnLeft();  
    move();  
    turnLeft();  
}
```

```
function beepersRight() {  
    putBeeper();  
    move();  
    move();  
    putBeeper();  
    move();  
    move();  
    putBeeper();  
}
```

```
function beepersLeft() {  
    move();  
    putBeeper();  
    move();  
    move();  
    putBeeper();  
    move();  
}
```