COMP1002 Assignment 2

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Q1

a)
```
def move(option):
    If option is equal to “random”:
        Randomly generate a number in the range 1-4
    If the generated number is 1 or if option is equal to “North”:
        Move the mouse one step towards North, that is, Up
    Else, if the generated number is 2 or if option is equal to “East”:
        Move the mouse one step towards East, that is, Left
    Else, if the generated number is 3 or if option is equal to “South” :
        Move the mouse one step towards South, that is, Down
    Else if the generated number is 4 or if option is equal to “West”:
        Move the mouth one step towards West, that is, Right
```

b)
```
def findCheese():
    Let variable existence=False
    //temporarily let the variable storing the existence of cheese be false
    Let variable position be equal to 0
    //position is the variable storing how many slots away the cheese is
    Let variable direction be “North”
    //direction stores the direction of the located cheese, if found
    For i in range (0 to 7):
        If direction is equal to “North”, or If direction is equal to “South”, or If
        direction is equal to “East”, or If direction is equal to “West”:
            If Cheese is in the first neighboring slot in direction:
                existence=True
                position=1
                Return existence, position, direction
                Break
            Else, If Cheese is in the second neighboring slot in direction:
                existence=True
                position=2
                Return existence, position, direction
                Break
        Else, If direction is equal to “North-East”, or If direction is equal to “South-East”, or If direction is equal to “South-West”, or If direction is equal to “North-West”:
            If cheese is present in the slot exactly “North-East” of mouse:
                existence=True
                position=1
                direction=”North-East”
                Return existence, position, direction
                Break
            If cheese is present in the slot exactly “South-East” of mouse:
                existence=True
                position=1
                direction=”South-East”
                Return existence, position, direction
                Break
            If cheese is present in the slot exactly “North-West” of mouse:
                existence=True
                position=1
                direction=”North-West”
                Return existence, position, direction
                Break
            If cheese is present in the slot exactly “South-West” of mouse:
                existence=True
                position=1
                direction=”South-West”
                Return existence, position, direction
                Break
    If existence is equal to False:
        position=0
        direction=””
        Return existence, position, direction
```

b) def main():

```
Let variable found be False
While found is False:
    existence, position, direction= .findCheese()
    If existence is True:
        If direction is equal to “North”, or If direction is equal to “South”, or If direction is equal to “East”, or If direction is equal to “West”:
            If position is 1:
                .move(direction)
                found=True
            Else, If position is 2:
                .move(direction)
                .move(direction)
                found=True
        Else, If direction is equal to “North-East”, or If direction is equal to “South-East”, or If direction is equal to “South-West”, or If direction is equal to “North-West”:
            If direction is equal to “North-East”:
                .move(“North”)
                .move(“East”)
                found=True
            Else, If direction is equal to “South-East”:
                .move(“South”)
                .move(“East”)
                found=True
            Else, If direction is equal to “North-West”:
                .move(“North”)
                .move(“West”)
                found=True
            Else, If direction is equal to “South-West”:
                .move(“South”)
                .move(“West”)
                found=True
    Else, If existence is False:
        .move(“random”)
        found=False

main()
```

Q2

```
a) Function convertlength:
        Let mnum be the integer
        Let m be the length of the integer
        Let nnum be equal to mnum
        Let n be the length of the output integer
        numtoadd=n-m
        If m begins with a 0:
                Add numtoadd number of 0s to nnum
        Else:
                Add numtoadd number of 1s to nnum
        Return the integer of length n and return nnum
b) Function addition:
        Let 0+0=0, 1+0=1, 0+1=1, 1+1=0
        Let sum be 0
        Start from the right most digit of m
                Add the corresponding digit of n the digit of m
                if carry=1, add 1
                Save the answer as the leftmost digit of sum

                If you just performed 1+1=0, let carry be 1
                Else, let carry be 0
        If n and m are negative:
                Discard the final carry
```