

# Quiz - Lecture 14

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**Due** 11 Sep at 23:59      **Points** 5      **Questions** 4      **Available** 10 Sep at 9:10 - 11 Sep at 23:59 1 day  
**Time limit** None      **Allowed attempts** Unlimited

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## Instructions

These questions are about virtual machine code.

Take the quiz again

## Attempt history

	Attempt	Time	Score
KEPT	<a href="#">Attempt 2</a>	2 minutes	5 out of 5
LATEST	<a href="#">Attempt 2</a>	2 minutes	5 out of 5
	<a href="#">Attempt 1</a>	less than 1 minute	1.22 out of 5

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Score for this attempt: **5** out of 5

Submitted 11 Sep at 0:47

This attempt took 2 minutes.

### Question 1

2 / 2 pts

What are each of the following memory segments used for in the Hack Virtual machine?

Correct!

**static**

holds values of class static var ▼

Correct!

**argument**

holds the arguments for the c ▼

Correct!

**local**

holds the local variables for th ▼

Correct!

**constant**

represents all the constants ir ▼

Correct!

**pointer**

used to change the start addr ▼

Correct!

**temp**

fixed 8-entry segment that hc ▼

Correct!

**field**

this is not a segment ▼

Correct!

**var**

this is not a segment ▼

Correct!

**result**

this is not a segment ▼

## Question 2

1 / 1 pts

Consider the following **Jack** class:

```
class bob
{
    function int foo(int a)
    {
        var int x;
        let x = a + x ;
        return x ;
    }
}
```

What are the first three virtual machine commands that implement function foo?

☐

```
function bob.foo 1
push constant 0
push argument 0
```

☒

```
function bob.foo 1
push argument 0
push local 0
```

Correct!

☐

```
push argument 0
push local 0
add
```

☐

```
function bob 1
push argument 0
push local 0
```

☐

```
function bob.foo 1
push argument 0
pop pointer 0
```

### Question 3

1 / 1 pts

Consider the following **Jack** function:

```
function int foo()
{
    var a,b,sum ;

    let b = 10 ;
    while ( a < b )
    {
        let sum = sum + a ;
        let a = a + 1 ;
    }
}
```

```
    return sum ;  
}
```

What sequence of virtual machine commands will implement the two let statements in the body of the while loop?

☐

```
push local 2  
push local 0  
add  
push local 0  
push constant 1  
add
```

☐

```
push local 3  
push local 1  
add  
pop local 3  
push local 1  
push constant 1  
add  
pop local 1
```

☐

```
push sum  
push a  
add  
push a  
push 1  
add
```

☐

```
push local 3
push local 1
add
push local 1
push constant 1
add
```

☐

```
push sum
push a
add
pop sum
push a
push 1
add
pop a
```

☒

```
push local 2
push local 0
add
pop local 2
push local 0
push constant 1
add
pop local 0
```

Correct!

Question 4

1 / 1 pts

Consider the following **Jack** class:

```
class bob
{
    function int foo(int a)
    {
        var int x;
        let x = a + x ;
        return x ;
    }
}
```

What sequence of virtual machine commands is used to initialise the local variable x?

☐ function foo 1

☐ push constant 0  
pop x

☒ function bob.foo 1

☐ The programmer has forgotten to initialise x, no code is generated.

☐ push constant 0

☐ push constant 0  
pop local 0

Correct!

The function command initialises all local variables by pushing the required number of 0s onto the stack. No additional virtual machine commands are required.

Quiz score: **5** out of 5