



SAMPLE SHORT ANSWER QUESTIONS



WINTER 2019 FINAL EXAM SHORT ANSWER Q7

[2] 7) What is the output of the following code?

```
for ( int i = 200; i > 0; i=i-50 ) {  
    println( i );  
}
```

Output:



FALL 2018 FINAL EXAM SHORT ANSWER Q7

- [2] 7) Write a loop that will print every Nth number from 0 to 20, inclusive. For example, if $N=5$, it should print 0, 5, 10, 15, and 20, and if $N=6$ it should print 0, 6, 12, 18.

WINTER 2019 FINAL EXAM SHORT ANSWER Q8

- [2] 8) Assume the following three functions already exist: `generatePoint()` assigns values to `x` and `y`, `offCanvas()` returns true if `(x,y)` is off the canvas, and `drawCreature()` draws a creature at `(x,y)`. Fill in the blanks below with an appropriate loop that draws creatures until the creature would be off the canvas:

```
int x, y; //state variables
boolean isOnCanvas;
```

```
_____ {
    generatePoint(); //puts values in x and y
    isOnCanvas = !offCanvas();
    if ( isOnCanvas )
        drawCreature(); //draws creature at x,y
} _____
```

WINTER 2019 FINAL EXAM SHORT ANSWER Q10

[2] 10) What is printed by the following code?

```
String s = "";  
s += 'c';  
s += (4 + 1);  
println( s + s.charAt(1) );
```

Output:



FALL 2018 FINAL EXAM SHORT ANSWER Q11

- [2] 11) Complete the function below, so that it is named **maxMagnitude**, accepts two **float** parameters, and returns the one with the larger magnitude (i.e. absolute value).

```
_____
    if(abs(x) > abs(y))
_____
    else
_____
_____
```

FALL 2018 FINAL EXAM SHORT ANSWER Q12

[2] 12) What are the two main reasons for defining functions in your program?

FALL 2018 FINAL EXAM SHORT ANSWER Q13

- [2] 13) Write *one* line of code that creates an array named **favourites** that contains three **String** values giving the names of your three favourite foods.

WINTER 2019 FINAL EXAM SHORT ANSWER Q13

- [2] 13) Given the declaration `int[] arrA = {8, 3, 0, 2, 7, 9, 6};` and the declaration `int[] arrB = new int[10];`, what is the result of each of the following expressions? If an expression will give an error, state the error.

`arrB[2]` _____

`arrA[arrA.length/3]` _____

`arrB[arrB.length]` _____

`arrA[arrA[3]]` _____

WINTER 2019 FINAL EXAM SHORT ANSWER Q14

[2] 14) Given the following code:

```
int[] a;  
int[] b = new int[30];  
for(int i=1; i<=5; i++){  
    b = new int[i];  
}
```

How many array variables are created?

How many array objects are created?

FALL 2018 FINAL EXAM SHORT ANSWER Q15

- [2] 15) You need to be able to store up to 10 names, using a partially-full array. Give the *declaration statements* that would define and initialize all of the variables and constants that you would need to do this. *Do not write any other code.*

WINTER 2019 FINAL EXAM SHORT ANSWER Q15

[2] 15) Suppose we declared a partially-filled array (PFA) of ints:

```
final int MAX_PFA_SIZE = 100;  
int[] myPFA = new int[ MAX_PFA_SIZE ];  
int currentSize = 0; //current number of ints stored in myPFA
```

Fill in the blanks so that the following code prints on the console all numbers currently stored in myPFA that are bigger than 15:

```
for ( int i = 0; _____; _____ ) {  
    if ( _____ )  
        println( _____ );  
} // end for
```

WINTER 2019 FINAL EXAM SHORT ANSWER Q16

[2] 16) Complete the following function to delete an element at a given position from a partially-filled array.

```
int delete( int[] data, int size, int position){
    //delete the item in the given position, if the position is OK
    if(_____){
        for(int i=____;____; i++){
            data[i] = data[i+1];
        }
        size--;
    }
    return size;
}
```



SAMPLE PROGRAMMING QUESTIONS



WINTER 2019 FINAL EXAM PROGRAMMING Q2I

- [5] 21) Complete the following non-active program so that the output is a modified version of the `String s`, where all spaces have been replaced with the last vowel before the space. If a space is encountered before any vowels, replace the space with 'a'. For example, if `s = "Computer science is fun"`, the output should be `"Computerescienceeisifun"`. If `s = "h ve go dsummer"`, the output should be `"haveegoodsummer"`.

```
String s = "There are many vowels in most sentences."
```

```
String output = "";
```

```
// FILL IN HERE
```

```
println(output);
```

```
// END OF PROGRAM
```

FALL 2018 FINAL EXAM PROGRAMMING Q20

[5] 20) Complete the program below, which animates drops of water falling from a leaky tap. Assume that the code to draw the tap has already been written. You do not have to write it. You need to draw only the water drops.

- The drops should be white, and they should be in the centre of the canvas horizontally.
- Each drop should be `DROP_SPACING` pixels lower than the one above it.
- The centre of the highest drop should be at `DROP_START` plus a small amount stored in `dropFallen`, which controls how far the top drop has fallen.
- Slowly change the value of `dropFallen` to cause the drops to fall. When `dropFallen` reaches `DROP_SPACING` then you should start a new drop at `DROP_START`.
- The top drop should be hidden inside the faucet when it begins to fall, as shown.



Also see next page

FALL 2018 FINAL EXAM PROGRAMMING Q20

```
final int DROP_START = 250; //Y coordinate where the drop centres start
final int DROP_SPACING = 125; //Space between drops in the Y direction
final int DROP_DIAMETER = 30; //Diameter of all drops
final int DROP_SPEED = 3; //Speed that all drops fall (pixels per frame)

int dropFallen = 0; //How far the top drop has fallen from DROP_START.

void setup(){
    size(600,800);
}
void drawFaucet(){
    //Assume code to draw the faucet is here. You DO NOT need to write anything.
}
void draw(){
    background(192);

}

void drawDrops(){
    //This function should draw all of the drops.
```

WINTER 2019 FINAL EXAM PROGRAMMING Q23

- [5] 23) Write a function named `filter`, which will accept an array of `int` values, and an `int` named `min`. It should create and return another array of `int` values, where the new array contains all values from the original array that are greater than or equal to `min`. For example, for the array
- ```
int[] test = {3,9,-2,6,1,8};
```
- the function call
- ```
int[] result = filter(test,4);
```
- should return the array
- ```
{9,6,8}.
```
- The array returned should be exactly the correct size to hold the required number of values. The original array may be any size, 0 or greater.

## FALL 2018 FINAL EXAM PROGRAMMING Q23

- [5] 23) Complete the function `validatedData(float[] data)` which will accept a full array of `float` values. It should create and return another array of `float` values containing only the “valid” data values from the array. The `validate` function (shown below) must be used to determine if a value is valid or not. The array returned should be exactly the correct size to hold the required number of values.

```
boolean validate(float x){ return 0 <= x && x <= 100; }
```

```
float[] validatedData(float[] data){
```

# WINTER 2019 FINAL EXAM PROGRAMMING Q24

- [5] 24) Complete the function `myBestSearch` below, which should search the sorted array `myArray` for `key`. If `key` is found, the function should return the index (position) where it occurs in `myArray`. If the `key` is not found in the array, the function should return `-1`.  
Note: The maximum mark is 5 if you do a binary search, and 3 if you do a linear search.

```
int myBestSearch (int[] myArray, int key){
```