Practicum 2 Practice

Q1) What is the output of the following code?

```
#include <iostream>

using namespace std;
int main()
{
    string animals[6] = {"hamster", "zebra", "goat", "lion", "penguin"};
    for(int i = 0; i < 6; i++)
    {
        if(animals[i+2] == "lion")
        {
            animals[i+1] = "giraffe";
        }
        else if(animals[i/2] == "hamster")
        {
            animals[i+4] = "fruitbat";
        }
        else
        {
            i++;
        }
    }
    for(int i = 5; i >= 0; i--) {
        cout << animals[i] << " ";
    }
    cout << endl;
    return 0;
}
```

Q2) Consider the following function:

```
void modify(int arr[], int size, int random)
{
    for(int i = 0; i < size/2; i++)
    {
        int temp = arr[size-i-1];
        arr[size-i-1] = 2 * arr[size/2-i-1];
        arr[size/2-i-1] = temp / random;
    }
}
```

What is the output of the code below?

```
int main()
{
    int arr[5] = {2, 9, 5, 13, 6};
    int random_num = 3;
    modify(arr, 5, random_num);
    for(int i = 0; i < 5; i++)
    {
        cout << arr[i] << " ";
    }
    cout << endl;
    return 0;
}
```

Q3) Which of the following is true about variables?

a. The same variable name can be used in two different functions.
b. The same variable name can be used for two different variables in the same function.
c. You should use global variables whenever possible.
d. A variable is visible from the point at which it is defined until the end of the program.

Q4a) Fill in all boxes below to complete a program that will use a function to calculate the “score” of a given integer array, where the score is equal to the sum of the numbers in the array divided by the sum of the array’s first and last numbers. For example, the array {1, 2, 3, 4, 5} would return 2.5 ((1.0 + 2.0 + 3.0 + 4.0 + 5.0) / (1.0 + 5.0)).

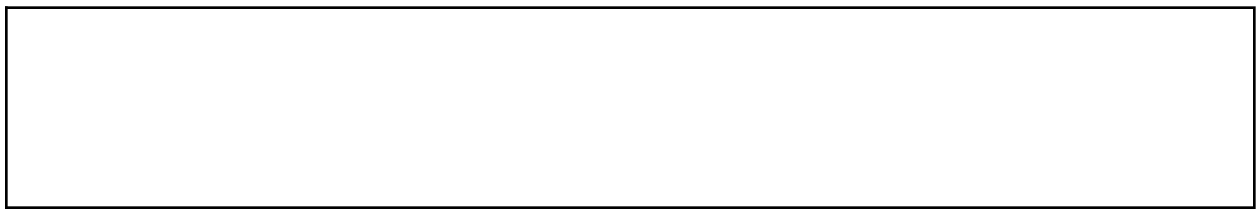
```
#include <iostream>

using namespace std;

double score(int arr[], int size)
{
```

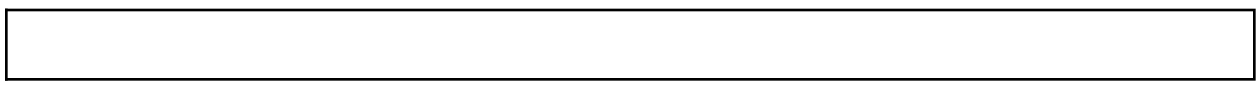
```
}

int main() {
    int nums[5] = {1, 4, 3, 11, 8};
```



```
}
```

4b) What will the score function return if the nums array shown in the main function above is passed in as the first parameter and 5 as the second parameter?



Q5) What is the value of **x_num** after the following code is run?

```
#include <iostream>

using namespace std;

void do_math(int x, int y, int z)
{
    if(x < y)
    {
        x = x * 3;
        y = y + 2;
    }
    else if(x < z)
    {
        x = x + 3;
        z = z / 2;
    }
    else
    {
        x--;
        y++;
        z++;
    }
    if(y > z)
    {
        y--;
        x++;
    }
}

int main()
{
    int x_num = 4, y_num = 8, z_num = 13;
    do_math(x_num, y_num, z_num);
    cout << x << endl;
}
```

Q6) How many times does the code snippet given below display "Monster Mash"?

```
int count = 0;
while (count != 9)
{
    cout << "Monster Mash" << endl;
    if ((count % 2) == 0)
    {
        count++;
    }
    else
    {
        count--;
    }
}
```

Q7) If a function is declared to return "void", then which statement below is true?

a. The function cannot return until reaching the end of the function body
b. The function needs a return statement that always returns the integer value zero
c. The function needs a return statement with no return value
d. The function cannot be invoked unless it is in an assignment statement

Q8) What is the syntax error in the following function definition?

```
string area(double r)
{
   double a;
   a = 3.14 * r * r;
   return r * r;
}
```

Q9) Which of the following statements about variables is true?

a. The same variable name can be used in two different functions.
b. A variable is visible from the point at which it is defined until the end of the program.
c. You should use global variables whenever possible.
d. The same variable name can be used for two different variables in a single function.

Q10) How many times will the loop shown below run?

```
int i = 0;
int j = 1;
do
{
   cout << i << ";" << j << endl;
   i++;
   if (i % 3 == 0)
   {
      j--;
   }
}
while (j >= 1);
```

Q11) What is the valid range of index values for an array of size 10?

a. `0 to 10`
b. `1 to 9`
c. `1 to 10`
d. `0 to 9`

Q12) What will be the output of the code snippet shown below?

```
int ctr = 0;
int myarray[3];
for (int i = 0; i < 3; i++)
{
myarray[i] = ctr;
ctr = ctr + i;
}
cout << myarray[2];
```

Q13) Which of the following statements are true about any function called from main()?

a. A function's code must appear in the source file above the main() code.
b. The function name cannot begin with an underscore.
c. A function's code must appear in the source file after the main() code.
d. A function's code can appear before or after main(), if a prototype statement (the function header) is above main().

Q14) Which one of the following is a valid signature of a function with an integer two-dimensional array parameter of size 10 x 10?

a. `void func(int arr[10, 10])`
b. `void func(int arr[][10])`
c. `void func(int arr[10][])`
d. `void func(int arr[][])`

Q15) Which of the following must be provided when defining a function?

a. A name for the function, a name and type for each parameter, and a type for the return value
b. A name for the function, a name for each parameter, and a name for the return value
c. A name for the function and a name for the return value
d. A name for the function but not for parameters or the return value

Q16) Consider a function named avg, which accepts four numbers as integers and returns their average as a double. Which of the following is the correct statement to call the function avg?

a. `avg(2, 3.14, 3, 5);`
b. `double average = avg("2", "3", "4", "5");`
c. `double average = avg(2, 3, 4, 5);`
d. `avg();`