COSC 220 Computer Science II Quiz2

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Name: Kalyn Howes

1. (10 pt) integer presentations
2. How positive integer +99 is saved in the 16-bit memory space (short) in a modern computer

Sol) convert 99 to binary = 1100011

1. How negative integer – 99 is saved in the 16-bit memory space(short) in a modern computer

Sol) convert +99 to binary = 1100011

Ones & twos complementation = 0011100

1. An integer value (short) is saved as a binary number 1111111111101110 in the 16-bit memory space, what is the integer value?

Sol) (1 × 2¹⁵) + (1 × 2¹⁴) + (1 × 2¹³) + (1 × 2¹²) + (1 × 2¹¹) + (1 × 2¹⁰) + (1 × 2⁹) + (1 × 2⁸) + (1 × 2⁷) + (1 × 2⁶) + (1 × 2⁵) + (0 × 2⁴) + (1 × 2³) + (1 × 2²) + (1 × 2¹) + (0 × 2⁰) = 65518

1. (10 pt) True False Problem
2. Reserved word cannot be overloaded by user declared variable.  **(T , F) TRUE**
3. Since +, −, \*, or % operators are provided by a system, these operators cannot be overloaded by programmer defined operators. **(T , F) FALSE**
4. A variable name cannot start with number but can start with the underscore \_ character. **(T , F) FALSE**
5. Since C++ is extended from C, any structure supported in C also legal in C++. **(T , F) TRUE**
6. In a structured data type with union, each member uses its own space in a memory. **(T , F) FALSE**
7. Only one member of a union can be active. **(T , F) TRUE**
8. We can make an array of primitive types but it is not possible to make an array of a structured data type since there are several members in a structured data type. **(T , F) FALSE**
9. When an array is declared statically in C++, system initiates each element of the array with default value. **(T , F) TRUE**
10. When an array is globally or locally declared in C++, system initiates each element of the array with default value. **(T , F) TRUE**
11. In a class, only public members and protected members can be accessed from outside class. **(T , F) TRUE**
12. The destructor for a class always is called automatically if an object (instance of the class) does not need anymore. **(T , F) TRUE**
13. (10 pt) Student’s ID number and three test scores for a COSC120 class are saved in the file “cosc120.txt”. Write a program which reads each student’s test score from the file and writes average scores to the file named “average.txt” with following format. (ignore open file error)

Ex) student.txt (input) average.txt (output)

Student 1903334: Average = 77.7

Student 3456351,: Average = 57.3

Student 1289334: Average = 90.8

…

…

COSC 120 Student Average = 72.7

1903334 78.3 82.5 72.5

3456351 54.8 60.5 56.7

1289334 96.5 85.5 90.3

…

…

A screenshot of a cell phone

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1. (10 pt) What are outputs of each of following programs
2. 63 b) Hi A

64 Hi B

663 Bye B

664 Bye A

**//b)**

**#include <iostream>**

**using namespace std;**

**class A {**

**public:**

**A() {cout <<" Hi A"<<endl;}**

**~A(){cout <<"Bye A" <<endl;}**

**};**

**class B{**

**public:**

**B() {cout <<" Hi B"<<endl;}**

**~B(){cout <<"Bye B" <<endl;}**

**private:**

**A a;**

**};**

**int main()**

**{**

**B C;**

**return 0;**

**}**

**//a)**

**#include <iostream>**

**using namespace std;**

**int \* a(int []);**

**void main()**

**{**

**int x[2] ={3,4};**

**int \*y;**

**y=a(x);**

**cout << y[0]<< endl;**

**cout << y[1] << endl;**

**y=a(x);**

**cout << y[0]<< endl;**

**cout << y[1] << endl;**

**}**

**int \*a(int x[])**

**{**

**static int y = 6;**

**y = y\*10;**

**x[0] = x[0]+y;**

**x[1] = x[1]+y;**

**return x;**

**}**

1. (10 pt) Trace the insertion sort, selection sort and bubble sort (bubble up) algorithms (increasing order) with the following data (show snapshots of array after each inside loop in the algorithm)

6, 3, 1, 7, 5, 2, 4

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Insertion Sort** | **Selection Sort** | **Bubble Sort** |
| 0 | 6, 3, 1, 7, 5, 2, 4 | 6, 3, 1, 7, 5, 2, 4 | 6, 3, 1, 7, 5, 2, 4 |
| 1 | 3, 6, 1, 7, 5, 2, 4 | 1, 3, 6, 7, 5, 2, 4 | 3, 1, 6, 7, 5, 2, 4 |
| 2 | 1, 3, 6, 7, 5, 2, 4 | 1, 2, 6, 7, 5, 3, 4 | 1, 3, 6, 7, 5, 2, 4 |
| 3 | 1, 3, 5, 6, 7, 2, 4 | 1, 2, 3, 7, 5, 6, 4 | 1, 3, 6, 5, 2, 4, 7 |
| 4 | 1, 2, 3, 5, 6, 7, 4 | 1, 2, 3, 4, 5, 6, 7 | 1, 3, 6, 2, 4, 5, 7 |
| 5 | 1, 2, 3, 4, 5, 6, 7 | 1, 2, 3, 4, 5, 6, 7 | 1, 3, 2, 6, 4, 5, 7 |
| 6 | 1, 2, 3, 4, 5, 6, 7 | 1, 2, 3, 4, 5, 6, 7 | 1, 2, 3, 4, 5, 6, 7 |

1. (10 pt) What will each of the following programs display on the screen?
2. Different b) 1 2 3 5 6 7 9 10

#include <iostream>

using namespace std;

void main ()

{

for (int i = 1; i <= 10; i++)

{

if (i % 4 ==0)

continue;

cout << i << ' ';

}

}

#include <iostream>

using namespace std;

void main()

{

char yourName[20] = "Mary";

char myName[20]="Mary";

if (yourName == myName)

cout << "Same"<<endl;

else

cout <<"Different"<<endl;

}

c) 1

2

4

5

7

8 d) ho are you?

10 o

#include <iostream>

using namespace std;

void main()

{

char \*ptr ={"Who are you?"};

cout << ptr+1 <<endl;

cout << \*(ptr+2) <<endl;

}

#include <iostream>

using namespace std;

void main ()

{

int count;

for (count = 1; count <= 10; count++)

{

if (!(count % 3 == 0))

cout << count << " "<<endl;

}

}

e) 1 2 3 f) JK

#include <iostream>

using namespace std;

void main()

{

char \*ptr[2] ={"ABCDEF", "GHIJK" };

cout << ptr[1]+3 <<endl;

}

#include <iostream>

using namespace std;

void main ()

{

for (int i = 1; i <= 10; i++)

{

if (i % 4 ==0)

break;

cout << i << ' ';

}

}

e) f)

g) an address h) D

#include <iostream>

using namespace std;

void main()

{

char \*ptr[2] ={"ABCDEF", "GHIJK" };

cout << \*(ptr[0]+3) <<endl;

}

#include <iostream>

using namespace std;

void main()

{

int a[5] ={1,2,3,4,5};

int \*ptr= a+2;

cout << ptr<<endl;

}

1. (10 pt.)Write a function named “**SumUp**”. The **SumUp** function returns sum up between two positive integers. For example, with integer 10 and 1 or 1 and 10, your function returns value 55 (= 1+2+3+4+5+6+7+8+9+10)

With your function, following output will display

**SumUp ( 10, 1 ) =55**

**SumUp ( 1, 10 ) =55**

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