

## Assignment 2

1. There is no keyword **sizeof** in Java. Why does C++ need it? What does it do?
2. What about declaration and definition of variable and difference between them. Illustrate with examples.
3. What does the **auto** specifier do?
4. What's the difference between reference and pointer? Illustrate with examples.
5. What's the difference between **malloc()** in C and **new** in C++? **Free()** in C and **delete** in C++? Illustrate with some examples.
6. Find and modify the errors in the following program.

```

1  #include <iostream>
2  #include <memory>
3  using namespace std;
4  int main(){
5      int i=10;
6      auto_ptr<int> ap1(new int(4)),ap2;
7      ap2=ap1;
8      cout << *ap2;
9      cout << *ap1 << endl;
10     char *c;
11     shared_ptr<char> sc;
12     sc=c;
13     sc=new char(10);
14     return 0;
15 }
```

7. Read the following program and determine the output.
- 1) Given the input "12 345 634 3214", and then press Enter key, please determine the output.

```

#include<iostream>
using namespace std;
int main(){
    int a;
    char b;
    char c[4];
    double d;
    cin>>a>>b>>c>>d;
    cout<<"a="<<a<<endl;
    cout<<"b="<<b<<endl;
    cout<<"c="<<c<<endl;
    cout<<"d="<<d<<endl;
    return 0;
}
```

2)

```
#include<iostream>
#include<iomanip>
using namespace std;
int main(){
    int a=20,b=18,c=24;
    cout<<"123456789012345678901234567890"<<"\n";
    cout<<setiosflags(ios::left);
    cout<<hex<<setw(10)<<a<<setw(10)<<b<<setw(10)<<c<<endl;
    cout<<oct<<setw(10)<<a<<setw(10)<<b<<setw(10)<<c<<endl;
    cout<<resetiosflags(ios::left);
    cout<<dec<<setw(10)<<a<<setw(10)<<b<<setw(10)<<c<<endl;
    return 0;
}
```

3)

```
#include <iostream>
using namespace std;
int main(){
    int a[][3]={1,2,3,4,5,6};
    int (*ptr)[3]=a;
    cout << (*ptr)[1] << (*ptr)[2];
    ++ptr;
    cout << (*ptr)[1] << (*ptr)[2];
    return 0;
}
```

8. Write a program to print the following graphics by using the **setw**, **cout** and **for** repetition.

```

      *
    ***
  *****
*****
*****

```

✧ Note:

For the assignment, write all your answer in the word document and save it with the name of "**StudentID\_Name\_2.pdf**". (The StudentID should be your full student ID such as **2023337621003\_叶子绿\_2.pdf**).

- ✧ Submit your assignment before the end of next Monday (**March 11**) to the Superstar platform!