Computer Laboratory - lab sheet 8

Task 1 Copy the program given below. Save (as `ref.cpp`), compile and run it.

```
// Use of the references
#include <iostream>
using namespace std;

int main(){
  float  n = 25.5; // the target
  float  &r1 = n;  // alias of the target
  float  &r2 = n;  // another alias of the target

  cout << "n, r1, r2 = " << n << '\t' << r1 << '\t' << r2<< endl;

  n = -4.3e-2;
  cout << "n, r1, r2 = " << n << '\t' << r1 << '\t' << r2<< endl;

  r1 = 12.99;
  cout << "n, r1, r2 = " << n << '\t' << r1 << '\t' << r2<< endl;

  cout << "&n, &r1, &r2 = " << &n << '\t' << &r1 << '\t' << &r2<< endl;
  return 0;
}
```

Task 2 Copy the program given below. Save (as `ptr.cpp`), compile and run it.

```
// Use of pointers
#include <iostream>
using namespace std;

int main(){
  int  n = 25;
  int *pn;

  pn = &n; // pn points to n
  cout << "n   = " << n  << '\n' << "&n  = " << &n << endl;
  cout << "pn  = " << pn << '\n' << "&pn = " << &pn << endl << endl;

  *pn = 70; // *pn is the alias of n
  cout << "n   = " << n  << '\n' << "*pn = " << *pn << endl;
  return 0;
}
```

Task 3 Copy the program given below. Save (as `ptr2.cpp`), compile and run it.

```
// Use of pointers and arrays
#include <iostream>
int main(){
  float  a[5];
  float *p;

  p = a;       // p holds the adr. of the 1st element of a
 *p = 1.5;     // that means a[0] = 1.5;
 *(p+1) = 2.2;
 *(p+2) = 7.1;
 *(p+3) = 8.3;
 *(p+4) = 9.9;
  cout << "  a[i]: ";
  for (int i=0; i<5; i++) std::cout << a[i]   << "  ";
  std::cout << std::endl;
  std::cout << "*(p+i): ";
  for (int i=0; i<5; i++) std::cout << *(p+i) << "  ";
  std::cout << std::endl;
  return 0;
}
```

Task 4 Write a function named `float* max(float a[], int n)` that is passed a float array of size n and returns a pointer to the maximum of the n floats. Use this program in a suitable main program.