2020\_2\_C++\_10주차 과제

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| **소스코드:**  #include <iostream>  #include <string>  using namespace std;  class Point;  void showPoint(const Point& p, const string pname);  class PointCom {  int cnt;  public:  PointCom() : cnt(0) {}  Point pointAdd(const Point& p1, const Point& p2);  Point pointMul(const Point& p1, const Point& p2);  ~PointCom() { cout << "cnt= " << cnt << endl; }  };  class Point {  int x, y;  public:  Point() : x(0), y(0) {}  Point(const int& xp, const int& yp) : x(xp), y(yp) {}  friend PointCom;  friend void showPoint(const Point& p, const string pname);  };  Point PointCom::pointAdd(const Point& p1, const Point& p2) {  Point temp;  temp.x = p1.x + p2.x;  temp.y = p1.y + p2.y;  cnt++;  return temp;  }  Point PointCom::pointMul(const Point& p1, const Point& p2) {  Point temp;  temp.x = p1.x \* p2.x;  temp.y = p1.y \* p2.y;  cnt++;  return temp;  }  void showPoint(const Point& p, const string pname) {  cout << "Point : " << pname << endl;  cout << "x: " << p.x << ", y: " << p.y << endl << endl;  }  int main() {  Point p1(3, 4);  Point p2(5, 6);  PointCom pc;  showPoint(p1, "p1");  showPoint(p2, "p2");  showPoint(pc.pointAdd(p1, p2), "pAdd");  showPoint(pc.pointMul(p1, p2), "pMul");  return 0;  } |
| **실행결과:** |

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| **소스코드:**  #include <iostream>  #include <string>  #include <cstdlib>  #include <ctime>  using namespace std;  class Person {  string name;  public:  Person(string name = "") { this->name = name; }  string getName() { return name; }  bool go();  };  class UpAndDownGame {  static int answer;  static int min;  static int max;  static void ans\_rand();  static void show();  public:  static bool check(int num);  static void run();  };  bool Person::go() {  int num;  cout << name << ">> ";  cin >> num;  return UpAndDownGame::check(num);  }  int UpAndDownGame::answer = 0;  int UpAndDownGame::min = 1;  int UpAndDownGame::max = 100;  void UpAndDownGame::ans\_rand() {  srand((unsigned int)time(0));  answer = (rand() % max) + min;  }  void UpAndDownGame::show() {  cout << "답은 " << min << "과 " << max << "사이에 있습니다." << endl;  }  bool UpAndDownGame::check(int num) {  if (answer == num)  return true;  if (answer > num)  min = num;  if (answer < num)  max = num;  return false;  }  void UpAndDownGame::run() {  cout << "Up & Down 게임을 시작합니다." << endl;  ans\_rand();  Person \*p[2];  string name;  int index = 0;  for (int i = 0; i < 2; i++) {  cout << "이름을 입력하세요>> ";  cin >> name;  p[i] = new Person(name);  }  while (true) {  show();  if (p[index]->go()) {  cout << p[index]->getName() << "이(가) 이겼습니다!!" << endl;  break;  }  index++;  if (index == 2)  index = 0;  }  for (int i = 0; i < 2; i++)  delete p[i];  }  int main() {  UpAndDownGame::run();  return 0;  } |
| **실행결과:** |

3.

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| **소스코드:**  #include <iostream>  #include <string>  #include <cstdlib>  #include <ctime>  using namespace std;  class Random {  public:  static int nextInt(int min = 0, int max = 32767);  static char nextAlphabet();  static string nextString(int length);  };  int Random::nextInt(int min, int max) {  return (rand() % max) + min;  }  char Random::nextAlphabet() {  int choice = rand() % 2;  if (choice == 0)  return (char)((rand() % 26) + 65); // 대문자  else  return (char)((rand() % 26) + 97); // 소문자  }  string Random::nextString(int length) {  string s;  for (int i = 0; i < length; i++) {  char ch = nextAlphabet();  s += ch;  }  return s;  }  int main() {  srand((unsigned int)time(0));    cout << "1에서 100까지 랜덤한 정수 10개를 출력합니다." << endl;  for (int i = 0; i < 10; i++)  cout << Random::nextInt(1,100) << "\t";    cout << endl << endl << "알파벳을 랜덤하게 10개를 출력합니다." << endl;  for (int i = 0; i < 10; i++)  cout << Random::nextAlphabet() << "\t";  cout << endl << endl << "길이가 5~15인 랜덤한 문자열 5개를 출력합니다." << endl;  int length;  for (int i = 0; i < 5; i++) {  length = (rand() % 11) + 5;  cout << Random::nextString(length) << ":" << length << endl;  }  return 0;  } |
| **실행결과:** |

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| **소스코드:**  #include <iostream>  using namespace std;  class ArrayUtility2 {  public:  static int\* concat(int s1[], int s2[], int size);  static int\* remove(int s1[], int s2[], int size, int& retSize);  };  int\* ArrayUtility2::concat(int s1[], int s2[], int size) {  int\* arr = new int[10];    for (int i = 0; i < size; i++) {  arr[i] = s1[i];  arr[i+5] = s2[i];  }  return arr;  }  int\* ArrayUtility2::remove(int s1[], int s2[], int size, int& retSize) {  int\* reArr;  for (int i = 0; i < size; i++) {  for (int j = 0; j < size; j++) {  if (s1[i] == s2[j]) {  s1[i] = NULL;  retSize--;  break;  }  }  }  reArr = new int[retSize];  for (int i = 0, j = 0; i < size && j < retSize; i++) {  if (s1[i] != NULL) {  reArr[j] = s1[i];  j++;  }  }  return reArr;  }  int main() {  int retSize = 5;  int x[5], y[5];  int\* parr;  cout << "정수를 5개 입력하라. 배열 x에 삽입한다>> ";  for (int i = 0; i < 5; i++)  cin >> x[i];  cout << "정수를 5개 입력하라. 배열 y에 삽입한다>> ";  for (int i = 0; i < 5; i++)  cin >> y[i];  parr = ArrayUtility2::concat(x, y, 5);  cout << "합친 정수 배열을 출력한다." << endl;  for (int i = 0; i < 10; i++)  cout << parr[i] << " ";  parr = ArrayUtility2::remove(x, y, 5, retSize);  cout << endl << "배열 x[]에서 배열 y[]를 뺀 결과를 출력한다. 개수는 " << retSize << endl;  for(int i=0; i< retSize; i++)  cout << parr[i] << " ";  cout << endl;  return 0;  } |
| **실행결과:** |