**알고리즘YD 20212127 송하성**

**10주차 과제**

**[예제 1]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  main() {  int\* p, q;  q = 100;  p = &q;  printf("%d", \*p);  } |

**[예제2]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  main() {  int\* p, q;  float\* fp, x;  p = &q;  \*p = 199;  fp = &x;  scanf("%f", fp);  x = \*fp;  printf("%d---%.2f\n", q, x);  } |

**[예제 3]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS //355  #include <stdio.h>  void swap(int \*px, int \*py) {  int temp;  temp = \*px;  \*px = \*py;  \*py = temp;  }  main() {  int x, y, z;  printf("세 수를 입력하시오");  scanf("%d %d %d", &x, &y, &z);  if (x > y)swap(&x, &y);  if (y > z)swap(&y, &z);  if (x > z)swap(&x, &z);  printf("%d \*\*\*\* %d \*\*\*\* %d\n", x, y, z);  } |

**[문제1]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  main() {  int x = 10, y = 20, z;  z = add\_product(&x, y);  printf("x = %d :: y = %d :: z = %d\n", x, y, z);  }  int add\_product(int\* a, int b) {  int temp = b;  b = \*a + b;  \*a = \*a \* temp;  return b;  } |

**[문제2]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  float trunc\_sum(float\* data) {  float sum = 0.0;  int i, ivalue;  for (i = 0; i < 10; i++) {  ivalue = data[i];  sum += (data[i] - ivalue);  }  return sum;  }  main() {  float xarray[10], fsum = 0.0;  int i;  printf("Enter 10 reals : \n");  for (i = 0; i < 10; i++) {  scanf("%f", xarray +i); //xarray = &xarray[0]  fsum = fsum + \*(xarray +i);  }  printf("sum = %.2f\n", fsum);  printf("%Truncation Value = %.2f\n", trunc\_sum(xarray));  } |

**[예제4]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  #include <stdlib.h>  main() {  int\* ip;  float\* fp;  ip = (int\*)malloc(sizeof(int)); //동적 메모리 할당  fp = (float\*)malloc(sizeof(float));  \*ip = 2020; \*fp = 7.123; //동적 메모리 사용  printf("year = %d : point = %.3f\n", \*ip, \*fp);  free(ip); free(fp); //동적 메모리 반납  } |

**[연결리스트]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  #include <stdlib.h>  typedef struct simple\_list\* simple\_pointer;  struct simple\_list {  char state[5];  int count;  simple\_pointer next;  };  simple\_pointer state\_list() {  simple\_pointer node1, node2;  node1 = (simple\_pointer)malloc(sizeof(struct simple\_list));  node2 = (simple\_pointer)malloc(sizeof(struct simple\_list));  strcpy(node1->state, "NY");  node1->count = 5;  node1->next = node2;  strcpy(node2->state, "FL");  node2->count = 10;  node2->next = NULL;  return node1;  };  void print\_list(simple\_pointer ptr);  void append(simple\_pointer ptr, simple\_pointer inode);  int main() {  simple\_pointer ptr, inode;  ptr = state\_list();  inode = (simple\_pointer)malloc(sizeof(struct simple\_list));  strcpy(inode->state, "TX");  inode->count = 7;  append(ptr, inode);  print\_list(ptr);  }  void print\_list(simple\_pointer ptr) {  printf("The singly linked list contains : \n");  while (ptr != NULL) {  printf("%s : %d\n", ptr->state, ptr->count);  ptr = ptr -> next;  }  }  void append(simple\_pointer ptr, simple\_pointer inode)  {  simple\_pointer before = NULL;  while (ptr != NULL) {  before = ptr;  ptr = ptr->next;  }  before->next = inode;  inode->next = NULL;  } |

**[연결리스트 구현]**

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| C |
| #define \_CRT\_SECURE\_NO\_WARNINGS  #include <stdio.h>  #include <stdlib.h>  #include <string.h>  typedef struct course\_node\* course\_list\_pointer;  struct course\_node {  char courseid[10];  char tname[20];  unsigned snum;  unsigned roomnum;  course\_list\_pointer next;  };  void printout\_over40(course\_list\_pointer ptr);  void search\_prof(course\_list\_pointer ptr, char name[]);  void search\_room(course\_list\_pointer ptr, unsigned sroomnum);  main(int argc, char\* argv[]) {  FILE \*coursedb;  course\_list\_pointer temp, before = NULL, ptr = NULL;  char sprof[20];  unsigned sroomnum;  if ((coursedb = fopen(argv[1], "r")) == NULL) {  printf("데이터 파일을 열 수 없습니다.\n");  exit(1);  }  temp = (course\_list\_pointer)malloc(sizeof(struct course\_node));  while (fscanf(coursedb, "%s %s %u %u",  (temp->courseid), (temp->tname),  &(temp->snum), &(temp->roomnum)) != EOF) {  if (ptr)  before->next = temp;  else  ptr = temp;  before = temp;  temp = (course\_list\_pointer)malloc(sizeof(struct course\_node));  }  before->next = NULL;  printf("수강인원이 40명 이상인 강좌 코드 번호를 출력.\n");  printout\_over40(ptr);  printf("검색하고자 하는 교수이름 입력 :");  scanf("%s", sprof);  printf("%s 교수가 강의하는 강좌코드와 강의실 번호를 출력.\n", sprof);  search\_prof(ptr, sprof);  printf("검색하고자 하는 강의실 번호 입력 :");  scanf("%u", &sroomnum);  printf("%u 강의실에 수업하는 강좌코드와 담당교수 출력.\n", sroomnum);  search\_room(ptr, sroomnum);  }  void printout\_over40(course\_list\_pointer ptr){  for (; ptr; ptr = ptr->next)  if (ptr->snum >= 40)  printf("%s\n", ptr->courseid);  }  void search\_prof(course\_list\_pointer ptr, char name[]){  for (; ptr; ptr = ptr->next)  if (!strcmp(ptr->tname, name))  printf("%s\t%u\n", ptr->courseid, ptr->roomnum);  }  void search\_room(course\_list\_pointer ptr, unsigned sroomnum) {  for (; ptr; ptr = ptr->next)  if (ptr->roomnum == sroomnum)  printf("%s\t%s\n", ptr->courseid, ptr->tname);  } |