Tutorial 5 – Structures – Suggested Answers

1. (**computeCircle**)

```
int intersect(struct circle c1, struct circle c2)
{
    double a, b;
    int result;

    a = c1.x - c2.x;
    b = c1.y - c2.y;
    return (sqrt(a*a + b*b) <= (c1.radius + c2.radius));
}
int contain(struct circle *c1, struct circle *c2)
{
    double a, b;

    a = c1->x - c2->x;
    b = c1->y - c2->y;
    return (c1->radius >= (c2->radius + sqrt(a * a + b * b)));
}
```

2. (**computeAverage**)

```
double average()
{
    struct student stud[50];
    double sum = 0;
    int i;

    /* get student scores */
    i=0;
    printf("Enter student name: \n");
    gets(stud[i].name);
    while (strcmp(stud[i].name, "END")!=0)
    {
        printf("Enter test score: \n");
        scanf("%lf", &stud[i].testScore);
        printf("Enter exam score: \n");
        scanf("%lf", &stud[i].examScore);
        /* compute total */
        stud[i].total = (stud[i].testScore + stud[i].examScore)/2;
        printf("Student %s total = %.2f\n", stud[i].name, stud[i].total);
        sum += stud[i].total;
        i++;
        printf("Enter student name: \n");
        scanf("\n");
        gets(stud[i].name);
```

```c
      }
    if (i != 0)
      return (sum/i);
    else
      return 0;
  }
```

3. (**phoneBook**)

```c
void printPB(PhoneBk *pb, int size)
{
  int i;

  printf("The phonebook list: \n");
  if (size==0)
    printf("Empty phonebook\n");
  else {
    for (i=0; i<size; i++) {
      printf("Name: %s\n", (pb+i)->name);
      printf("Telno: %d\n", (pb+i)->telno);
    }
  }
}
int readin(PhoneBk *pb)
{
  int size=0;
  char *p, dummy[80];

  while (1) {
    printf("Enter name: \n");
    fgets(pb->name, 80, stdin);
    if (p=strchr(pb->name,'\n')) *p = '\0';
    if (strcmp(pb->name,"#")==0)
      break;
    printf("Enter tel: \n");
    scanf("%d",&(pb->telno));
    fgets(dummy, 80, stdin);
    pb++;
    size++;
  }
  return size;
}
void search(PhoneBk *pb, int size, char *target)
{
  int i;

  for (i=0;i<size;i++,pb++){
    if (strcmp(pb->name,target)==0){
```

```c
            printf("Name = %s, Tel = %d\n",target,pb->telno);
            break;
        }
    }
    if (i==size)
        printf("Name not found!\n");
}
```