EGN 3211 Test 3 (MWF) Dr. Fernando Gonzalez Fall 2005

NAME Solutions

1. Given the following data structures, on the next page write a segment of code to do each task.

```
class BirthData
     {
     private:
          char place[100];
     public:
          char month[10];
          int  day;
          int  year;
          void display( );
               {
               printf(``%s %s %d
%d\n'',place,month,day,year);
               }
          void assignplace(char    p[100])
               {
               strcpy(place, p);
               }
          void readplace( char p[100])
               {
               strcpy(p, place);
               }
     }

struct employmentrecord
     {
     char      place[100];
     char      month[10];
     char      name[100];
     BirthData BD;
     Void display( )
          {
          printf(``%s %s \n'',place,name);
          BD.display( );
          }
     }

employmentrecord    Records[100];
```

Write a segment of code to do each task:

a) Change the first letter of each employee's name to 'A'.

```
for(i=0; i<100; i++)
    Records[i].name[0] = 'A';
```

b) Change the first letter of each employee's birth place to 'B'.

```
for (i=0; i<100; i++)
{
Records[i].BD.readplace(str)
str[0] = 'B';
Records[i].BD.assignplace(str);
}
```

c) Change the year of each employee's birth year to 2000.

```
for(i=0; i<100; i++)
    Records[i].BD.year = 2000;
```

d) Add 1 to employee # 37's birth year.

```
Records[37].BD.year = Records[37].BD.year +1;
```

e) Print the record number for every employee whose work month is the same as there birth month. Use strcmp( ) to compare 2 strings. It returns 0 when equal.

```
for (i=0; i<100; i++)
{
if( strcmp(Records[i].month,
        Records[i].BD.month) == 0 )
    printf("%d", i);
}
```

2. Show the contents of each variable and the output of the following program

```
class MyClass
      {
      public:
            int   a,
            int   b;
            int   c;
            MyClass(int x, int y, int z)
                  {
                  a = x;
                  b = y;
                  c = z;
                  printf(''%d %d %d\n'',a,b,c);
                  }
      }

MyClass     MC1(1,2,3), MC2(10,11,12);
int         a = 30, b = 40, x = 50, y = 60, w = 70;

void bill ( MyClass     *MC)
      {
      MC->b = a + 1;
      MC2.c = MC1.a;
      MC->c = MC->c + 1;
      }

void main()
      {
      int   a = 80, c = 90, MC3 = 100;

      MC1.a = a;
      MC2.b = MC3;
      printf(''%d %d %d\n'',MC1.a,MC1.b,MC1.c);
      bill(MC1);
      printf(''%d %d %d\n'',MC1.a,MC1.b,MC1.c);
      MC2.a = MC1.c;
      printf(''%d %d %d\n'',MC2.a,MC2.b,MC2.c);
      }
```

output

1	2	3
10	11	12
80	2	3
80	31	4
4	100	80

file

MC1

a	b	c
1	2	3
80	31	4

file

MC2

a	b	c
10	11	12
4	100	80

file

a	b	x	y	w
30	40	50	60	70

Bill

*MC
file's MC1

main

a	c	MC
80	90	100

3. Write a class to maintain a company's records. The class is to hold an array of structures containing all of the employee's records. The data base consists of an array of 100 structures with the following fields in the structure: The employee's name, age, SSN, and pay. The class is to have this array as private. The constructor is to open a file called "thedata.dat" and read in the 100 records into the array of structures. The destructor is to write the 100 records from the array to the same file. Finally a display member function is to print a report of the 100 records.

   In the main program create a variable of the class you created, and give each employee a 10% raise. Then print a report of the records.

```
Struct Record
    {
    char   name[80];
    int    age;
    char   SSN[15];
    double pay;
    }

class database
    {
    private:
        Records Thedata[100];
    public:
        database()
            {
            FILE *fp;
            fp=fopen("thedata.dat", "r");
            if(fp==null)
                return;
            for(i=0; i<100; i++)
                fscanf("%s %d %s %lf",Thedata[i].name,
```

```
Void giveraise(doubly howmuch)
  {
  for(i=0; i<100; i++)
      Thedata[i].pay =
          Thedata[i].pay * howmuch;

  }
} // end class

Void main()
  {
  database data();

  data.giveraise(1.10);
  }
```

```
            Thedata[i].name,
            &(thedata[i].age,
            Thedata[i].SSN,
            &(Thedata[i].pay);
    fclose(fp);
    }
~database()
    {
    FILE  *fp;
    fp=fopen("thedata.dat", "w");
    if(fp==null)
       return;
    for(i=0; i<100; i++)
       fprintf(fp,"%s %d %s %lf",
            Thedata[i].name,
            Thedata[i].age,
            Thedata[i].SSN,
            Thedata[i].pay);
    fclose(fp);
    }
Void  display()
    {
    for(i=0; i<100; i++)
      printf("%s %d %s %lf",
    }
```