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Name : assignment1.c

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Version :

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Description : Hello World in C, Ansi-style

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#include <stdio.h>

#include <stdlib.h>

//declaration of functions

int setunion(int set1[],int set2[],int set3[],int lim1,int lim2);

int intersection(int set1[],int set2[],int set3[],int lim1,int lim2);

int difference1(int set1[],int set2[],int set3[],int lim1,int lim2);

int difference2(int set1[],int set2[],int set3[],int lim1,int lim2);

int symmetric(int set1[],int set2[],int set3[],int lim1,int lim2);

int main(void)

{

//declaration of variables

int set1[10];

int set2[10];

int set3[20];

int set4[20];

int set5[20];

int lim1,lim2,i,j,chk=1;

int choice;

int lim4=0;

int lim5=0;

while(chk)

{

int lim3=0;

printf("\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:\n 1 for input,\n 2 for displaying the sets,\n 3 for union of set,\n 4 for intersection of sets,\n 5 for the difference of sets,\n 6 for the symmetric difference,\n 7 for exit ");

scanf("%d",&choice);

switch(choice)

{

case 1:

//input of sets

printf("for set 1\n");

lim1=input(set1);

printf("for set2\n");

lim2=input(set2);

break;

case 2:

//diplaying the sets

printf(" set1 is");

display(set1,lim1);

printf( "set2 is");

display(set2,lim2);

break;

case 3:

//union of sets

printf("UNION OPERATION\n");

printf(" set1 is");

display(set1,lim1);

printf("set2 is");

display(set2,lim2);

lim3=setunion(set1,set2,set3,lim1,lim2);

printf("Set of union is");

display(set3,lim3);

break;

case 4:

//intersection of sets

printf("INTERSECTION OPERATION\n");

printf(" set1 is");

display(set1,lim1);

printf("set2 is");

display(set2,lim2);

lim3=intersection(set1,set2,set3,lim1,lim2);

printf("Intersection set is");

display(set3,lim3);

break;

case 5:

//difference of sets

printf("DIFFERENCE OPERATION\n");

printf(" set1 is");

display(set1,lim1);

printf("set2 is");

display(set2,lim2);

lim4=difference1(set1,set2,set4,lim1,lim2);

lim5=difference2(set1,set2,set5,lim1,lim2);

printf("Set of set2-set1 is");

display(set4,lim4);

printf("Set of set1-set2 is");

display(set5,lim5);

break;

case 6:

// symmetric difference of sets

printf("SYMMETRIC DIFFERENCE OPERATION\n");

printf(" set1 is");

display(set1,lim1);

printf("set2 is");

display(set2,lim2);

lim3=symmetric(set4,set5,set3,lim4,lim5);

printf("Set of symmetric difference is");

display(set3,lim3);

break;

case 7:

//exit

chk=0;

break;

}

}

return 0;

}

int input(int set[])//function for input the sets

{

int lim,i;

do //validation for size of set

{

printf("Enter the size of set\n");

scanf("%d",&lim);

if((lim<0)||(lim>10)) //comparison of size of set

{

printf("INVALID SIZE!!!!!!!\n");

}

}

while((lim<0)||(lim>10)); //for repetition of loop

printf("Enter the elements of set considering Universal set as{1,2,3,....,100}\n");

int j;

for(i=0;i<lim;i++)

{

printf("Element %d:",i+1);

scanf("%d",&set[i]);

if(i==0&&set[i]>100) //checking first element to be in universal set

{

printf("Element does not belong to Universal set\n");

i--;

}

for(j=i-1;j>=0;j--) //validation for non-repeated elements of set

{

if(set[i]==set[j]) //comparison of elements of set

{

printf("Duplicate element is not allowed!!!!!\n");

i--;

continue;

}

else if(set[i]>100) //comparison of element to be part of universal set

{

printf("Element does not belong to Universal set\n");

i--;

continue;

}

}

}

return lim;

}

int display(int set[],int size) //function for displaying the sets

{

int i;

printf(" :{");

for(i=0;i<size;i++)

{

printf("%d,",set[i]);

}

printf("}\n");

}

int setunion(int set1[],int set2[],int set3[],int lim1,int lim2)//function for union of sets

{

int lim3=0,i,j;

for(i=0;i<lim1;i++) //copying set1 in set3

{

set3[lim3]=set1[i];

lim3++;

}

for(j=0;j<lim2;j++) //finding uncommon elements in set1 and set2

{

for(i=0;i<lim1;i++)

{

if(set2[j]==set1[i])

break;//stop the inner for loop if common elements found

}

if(i==lim1) //copying uncommon elements of set1 and set2 in set3

{

set3[lim3]=set2[j];

lim3++;

}

}

return lim3;

}

int intersection(int set1[],int set2[],int set3[],int lim1,int lim2)//function for intersection of sets

{

int lim3=0,i,j;

for(j=0;j<lim2;j++)

{

for(i=0;i<lim1;i++)

{

if(set2[j]==set1[i]) //finding common elements in set1 and set2

{

set3[lim3]=set2[j];//copying common elements in set3

lim3++;

}

}

}

return lim3;

}

int difference1(int set1[],int set2[],int set3[],int lim1,int lim2)//function for difference set2-set1

{

int lim3=0,i,j;

for(j=0;j<lim2;j++)

{

for(i=0;i<lim1;i++)

{

if(set2[j]==set1[i])//comparison of elements of set1 and set2

break;//stop the inner for loop if common elements found

}

if(i==lim1)

{

set3[lim3]=set2[j];//copying of uncommon elements of set2 which are not in set1 in set3

lim3++;

}

}

return lim3;

}

int difference2(int set1[],int set2[],int set3[],int lim1,int lim2)//function for difference set1-set2

{

int lim3=0,i,j;

for(i=0;i<lim1;i++)

{

for(j=0;j<lim2;j++)

{

if(set1[i]==set2[j])//comparison of elements of set1 and set2

break;//stop the inner for loop if common elements found

}

if(j==lim2)

{

set3[lim3]=set1[i];//copying of uncommon elements of set1 which are not in set2 in set3

lim3++;

}

}

return lim3;

}

int symmetric(int set1[],int set2[],int set3[],int lim1,int lim2)//function for symmetric difference

{

int lim3=0,i,j;

for(i=0;i<lim1;i++) //copying set1 in set3

{

set3[lim3]=set1[i];

lim3++;

}

for(j=0;j<lim2;j++) //finding uncommon elements in set1 and set2

{

for(i=0;i<lim1;i++)

{

if(set2[j]==set1[i])

break;//stop the inner for loop if common elements found

}

if(i==lim1) //copying uncommon elements of set1 and set2 in set3

{

set3[lim3]=set2[j];

lim3++;

}

}

return lim3;

}

/\* \*\*\*\*\*\*\*\*\*\*output\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 1

for set 1

Enter the size of set

12

INVALID SIZE!!!!!!!

Enter the size of set

3

Enter the elements of set considering Universal set as{1,2,3,....,100}

Element 1:101

Element does not belong to Universal set

Element 1:1

Element 2:1

Duplicate element is not allowed!!!!!

Element 2:1

Duplicate element is not allowed!!!!!

Element 2:2

Element 3:3

for set2

Enter the size of set

4

Enter the elements of set considering Universal set as{1,2,3,....,100}

Element 1:1

Element 2:3

Element 3:4

Element 4:5

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 2

set1 is :{1,2,3,}

set2 is :{1,3,4,5,}

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 3

UNION OPERATION

set1 is :{1,2,3,}

set2 is :{1,3,4,5,}

Set of union is :{1,2,3,4,5,}

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 4

INTERSECTION OPERATION

set1 is :{1,2,3,}

set2 is :{1,3,4,5,}

Intersection set is :{1,3,}

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 5

DIFFERENCE OPERATION

set1 is :{1,2,3,}

set2 is :{1,3,4,5,}

Set of set2-set1 is :{4,5,}

Set of set1-set2 is :{2,}

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 6

SYMMETRIC DIFFERENCE OPERATION

set1 is :{1,2,3,}

set2 is :{1,3,4,5,}

Set of symmetric difference is :{4,5,2,}

\*\*\*\*\*\*\*\*\*Enter choice\*\*\*\*\*\*\*\*\*\*\*:

1 for input,

2 for displaying the sets,

3 for union of set,

4 for intersection of sets,

5 for the difference of sets,

6 for the symmetric difference,

7 for exit 7

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Process exited after 150.9 seconds with return value 0\*/