**Assignment 12**

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/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

1. to create memory for int, char and float variable at run time. \*/

#include<stdio.h>

#include<stdlib.h>

main()

{

int \*p;

char \*c;

float \*f;

p=(int\*)malloc(sizeof(int));

c=(char\*)malloc(sizeof(char));

f=(float\*)malloc(sizeof(float));

printf("Enter a int , char and float value : ");

scanf("%d %c %f",p,c,f);

printf("int = %d, char = %c, float = %f",\*p,\*c,\*f);

free(p);

free(c);

free(f);

getch();

return 0;

}

**OUTPUT**

Enter a int, char and float value:45

p

5.91

Int=45,char=p,float=5.910000

/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

2. to input and print text using Dynamic Memory Allocation. \*/

main()

{

char \*p;

p=(char\*)malloc(50);

printf("Enter a string : ");

gets(p);

printf("%s",p);

getch();

return 0;

}

**OUTPUT**

Enter a string :hy I am Pallabi sethi

Hy I am Pallabi sethi

/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

3. to read a one dimensional array, print sum of all elements along with inputted array

elements using Dynamic Memory Allocation. \*/

main()

{

int \*p,sum=0,size;

printf("Enter size : ");

scanf("%d",&size);

p=(int\*)calloc(size,4);

printf("Enter %d elements : ",size);

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

scanf("%d",p+i);

printf("Array is \n");

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

{

sum+=\*(p+i);

printf("%d ",\*(p+i));

}

printf("\nSum of all elements are : %d",sum);

getch();

return 0;

}

**OUTPUT**

Enter size:6

Enter 6 elements:65

87

22

44

99

98

Array is:65 87 22 44 99 98

Sum of all elements are:414

/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

4. to read and print the student details using structure and Dynamic Memory Allocation. \*/

typedef struct

{

char name[20];

int rollno;

}student;

main()

{

student \*p;

p=(student\*)malloc(sizeof(student));

printf("Enter name of the student : ");

gets(p->name);

printf("Enter roll no of %s : ",p->name);

scanf("%d",&p->rollno);

printf("Name : %s, Roll No : %d",p->name,p->rollno);

getch();

return 0;

}

**OUTPUT**

Enter name of the student : Pallabi

Enter Roll No of Pallabi : 100

Name :pallabi ,Roll No : 100

/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

5. to find sum of N elements entered by user. To perform this program, allocate memory

dynamically using malloc() function. \*/

main()

{

int \*p,sum=0,n;

printf("Enter the value of n : ");

scanf("%d",&n);

p=(int\*)malloc(sizeof(int)\*n);

printf("Enter %d elements : ",n);

for(int i=0; i<n; i++)

scanf("%d",p+i);

printf("Elements Are : \n");

for(int i=0; i<n; i++)

{

sum+=\*(p+i);

printf("%d ",\*(p+i));

}

printf("\nSum of %d elements is : %d",n,sum);

getch();

return 0;

}

**OUTPUT**

Enter the value of n :6

Enter 6 elements:65

87

22

44

99

98

Elements are :65 87 22 44 99 98

Sum of 6 elements is:414

/\*Write a C Program using Dynamic Memory Allocation for the following problem

statements

6. to find Largest of N Numbers. To perform this program, allocate memory dynamically

using calloc() and realloc() function.

\*/

main()

{

int \*p;

p=(int\*)malloc(4);

int n;

printf("Enter value of n : ");

scanf("%d",&n);

p=(int\*)realloc(p,sizeof(int)\*n);

printf("Enter %d numbers : ",n);

for(int i=0; i<n; i++)

scanf("%d",p+i);

int large=\*p;

for(int i=1; i<n; i++)

{

if(large<\*(p+i))

large=\*(p+i);

}

printf("Largest number : %d",large);

getch();

return 0;

}

**OUTPUT**

Enter the value of n : 6

Enter 6 elements:65

87

22

44

99

98

Largest number : 99

/\* Write a C Program using Pre-processors for the following problem statements

7. Display all prime numbers between two Intervals

\*/

#define START 1

#define END 100

main()

{

#ifdef START && END

for(int n=START; n<=END; n++)

{

int i;

for(i=2; i<n; i++)

if(n%i==0)

break;

if(i==n)

printf("%d ",n);

}

#endif // START

}

**OUTPUT**

2 3 5 7 11 19 23 29 31 37b41 43 47 53 59 61 67 71 73 73 83 89 97

/\* Write a C Program using Pre-processors for the following problem statements

8. Check Prime and Armstrong Number by making function \*/

#define NUM 153

main()

{

#ifdef NUM

prime(NUM);

armstrong(NUM);

#endif // NUM

}

void prime(int n)

{

int i;

for(i=2; i<n; i++)

if(n%2==0)

break;

if(i==n)

printf("%d is prime\n",n);

else

printf("%d is not prime\n",n);

}

void armstrong(int n)

{

int r,num,t;

t=n;

while(n)

{

num=num+(pow((n%10),3));

n=n/10;

}

if(num==t)

printf("%d is armstrong",num);

else

printf("%d is not a armstrong number ",t);

}

**OUTPUT**

153 is prime

153 is armstrong

/\* Write a C Program using Pre-processors for the following problem statements

9. Define a preprocessor macro swap(t, x, y) that will swap two arguments x and y of a given

type t. \*/

#define swap(t,x,y){t temp; temp=x; x=y; y=temp;}

main()

{

printf("Enter 2 numbers : ");

int a,b;

scanf("%d %d",&a,&b);

swap(int,a,b);

printf("%d %d",a,b);

getch();

return 0;

}

**OUTPUT**

Enter 2 number : 2 3

2 3

/\* 10.Define a preprocessor macro to select:

o the least significant bit from an unsigned char

o the nth (assuming least significant is 0) bit from an unsigned char.

\*/

#define LSB(x) (x = 0x01)

#define LSB1(x) (x&1)

#define nSB(x,n) (x&(1<<n))

#define lsb(a) a%2

main()

{

unsigned char a='A';

printf("%d\n",nSB(a,3));

printf("%d",LSB(a));

}

**OUTPUT**

0

1