Practical 3

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Aim: a) Write down definitions for the following (Using preprocessor directives):

1. Sum of digits of a number.
2. Reverse of a number.
3. To test whether a number is a palindrome or not. Make use of the macros you defined
in (1) and (2) above.

```
#include<stdio.h>
#include<conio.h>
#include "areaperi.h"
int main()
{
int number;
printf("enter the number to perform operations \n");
scanf("%d",&number);
int revnum=number;
SUMOFDIGIT(number);
REVERSENUM(revnum);
PALIN(number,revnum);
}

#define SUMOFDIGIT(n) {\
int sum=0;\
while(n>0){\
sum+=n%10;\
n=n/10; \
}\
printf("Sum of Digit is %d\n",sum);\
}
#define REVERSENUM(n) {\
```

```
int reverse = 0, remainder;\
while (n != 0) {\
remainder = n % 10;\
reverse = reverse * 10 + remainder;\
n /= 10;\
}\
printf("Reversed number = %d\n", reverse);\
}
#define PALIN(number,revnum) {\
if(number==revnum)printf("number is a palindrome");}
```

```
enter the number to perform operations
121
Sum of Digit is 4
Reversed number = 121
number is a palindrom
Process returned 0 (0x0)   execution time : 11.334 s
Press any key to continue.
```

(b) Write macro definitions with arguments for calculation of area and perimeter of a triangle, a square and a circle. Store these macro definitions in a file called “areaperi.h”. Include this file in your program, and call the macro definitions for calculating area and perimeter for different squares, triangles and circles.

```
#include<stdio.h>
#include<conio.h>
#include "areaperi.h"
int main()
{
int r, a, x, y, z;
double cir_ar, cir_peri, sqr_ar, sqr_peri, tri_ar, tri_peri;
printf("Enter the radius of the circle : ");
scanf("%d", &r);
printf("\nEnter the side of the square : ");
scanf("%d", &a);
printf("\nEnter the sides of the triangle : ");
scanf("%d%d%d", &x, &y, &z);
if (x + y>z && y + z>x && x + z>y)
{
tri_ar = TRI_AREA(x, y, z);
tri_peri = TRI_PERI(x, y, z);
printf("\nTriangle");
printf("\nArea : %lf\nPerimeter : %f\n", tri_ar,
tri_peri);
}
else
printf("\nThe triangle You entered is invalid.\n");
cir_ar = CIR_AREA(r);
cir_peri = CIR_PERI(r);
sqr_ar = SQR_AREA(a);
sqr_peri = SQR_PERI(a);
printf("\nCircle");
printf("\nArea : %f\nPerimeter : %f\n", cir_ar, cir_peri);
printf("\nSquare");
printf("\nArea : %f\nPerimeter : %f\n", sqr_ar, sqr_peri);
_getch();
return 0;
```

```
}
```

```
#include<math.h>
#define PI 3.14
#define S(a,b,c) ((a+b+c)/2.0)
#define
TRI_AREA(a,b,c)(sqrt((S(a,b,c))*((S(a,b,c))-a)*((S(a,b,c))-b)*((
S(a,b,c))-c)))
#define TRI_PERI(a,b,c) (a+b+c)
#define SQR_AREA(x) (x*x)
#define SQR_PERI(x) (2*(x+x))
#define CIR_AREA(r) (PI*r*r)
#define CIR_PERI(r) (2*PI*r)
```

```
Enter the radius of the circle : 5

Enter the side of the square : 4

Enter the sides of the triangle : 10 5 7

Triangle
Area : 16.248077
Perimeter : 22.000000

Circle
Area : 78.500000
Perimeter : 31.400000

Square
Area : 16.000000
Perimeter : 16.000000
```