Jaypee University of Engineering an Technology, Guna
Department of Computer Science and Engineering
Object Oriented Programming Lab(18B17CI271)
Lab Exercise-1
(Revisiting C Programming)

Q1.Write a program to round off an integer “i” to the next largest multiple of another
integer “j”. For example, 256 days when rounded off to the next largest multiple divisible
by a week result into 259.

Code:

```c
#include <stdio.h>

int main(){
    int i, j , x;
    printf("Enter the value of i\n");
    scanf("%d", &i);

    printf("Enter the value of j\n");
    scanf("%d", &j);

    //puting x to multiple of j from i

    x = (int)(i/j);

    //assigning x to next largest multiple of j

    x = x + 1;
    x = x*j;

    printf("rounded figure od %d \n", x);
    return 0;
}
```

```
Razas-MacBook-Pro:Lab1 razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q1.c -o q1 && "/Users/razakhan/Desktop/JUET
/Lab1/"q1
Enter the value of i
256
Enter the value of j
7
rounded figure od 259
Razas-MacBook-Pro:Lab1 razakhan$
```

Q2.A number is entered through the keyboard. The number may contain 1,2,3,4, or 5 digits. Write a program to find the number of digits in the number.

Code:

```c
#include <stdio.h>

int main(){
    int c = 0, n;
    printf("Enter the number \n");
    scanf("%d", &n);
    //dividing n by 10 repeatidly and adding c by 1 again upto n is not become 0

    while(n!=0){
        n = n /10;
        ++c;
    }
    printf("no. of digits in number is %d\n", c);
    return 0;
}
```

Output

```
Razas-MacBook-Pro:Lab1 razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q2.c -o q2 && "/Users/razakhan/Desktop/JUET
/Lab1/"q2
Enter the number
1431
no. of digits in number is 4
Razas-MacBook-Pro:Lab1 razakhan$
```

Q3.Write a program which finds a four-digit number AABB which is a perfect square. A
and B represent different digits. For example, 7744 is a four-digit perfect square number
which is also satisfying the condition AABB i.e. first two digits (AA=77) are same and
last two digits (BB=44) are same.

Code:

```c
#include <stdio.h>
#include <math.h>
int main()
{
    printf("perfect square of aabb is\n");
    int i, sq;
    float f;
    for (i = 1000; i < 10000; i++)
    {
        if (i % 10 == (i / 10) % 10 && (i / 100) % 10 == (i / 1000) % 10)
        {
            //cheking for perfect square
            f = sqrt((double)i);
            sq = f;
            if (sq == f)
                printf("%d\n", i);
        }
```

```
    }
    return 0;
}
```

Output:

```
cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q3.
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Razas-MacBook-Pro:JUET razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc top/JUET/Lab1/"q3sers/razakhan/Desk
perfect square of aabb is
7744
Razas-MacBook-Pro:Lab1 razakhan$
```

Q4. Write a program to calculate factorial of a number N through recursion.

Code :

```
#include<stdio.h>
//RECURSIVE FUNCTION
//taking n!=n*(n-1)!
int factorial(int n)
{
    if(n==0)
    return 1;
    else
    return(n*factorial(n-1));
}
int main()
{
     int N;
    printf("ENTER THE THE NUMBER \n");
    scanf("%d",&N);
    printf("Factorial of number is %d \n",factorial(N));
    return 0;
}
```

Output:

```
cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q4.
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Razas-MacBook-Pro:JUET razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc rs/razakhan/Desktop/JUET/Lab1/"q4
ENTER THE THE NUMBER
7
Factorial of number is 5040
Razas-MacBook-Pro:Lab1 razakhan$
```

Q5. Write a program which takes a string as input from user and returns the length of that string without using any string library functions.

Code:

```
#include <stdio.h>
int main()
```

```
{
    char s[100];
    int i = 0, l = 0;
    printf("enter the string \n");
    gets(s);
    //taking i to check string upto  null  character
    //simultaneously  increasing  l as string length
    while (s[i] != '\0')
    {
        l++;
        i++;
    }
    printf("length of string is %d \n", l);
    return 0;
}
```

Output:

```
cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q5.
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Razas-MacBook-Pro:JUET razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc /Lab1/"q55 && "/Users/razakhan/Desktop/JUET

enter the string
warning: this program uses gets(), which is unsafe.
13
length of string is 2
Razas-MacBook-Pro:Lab1 razakhan$
```

Q6.Write a pointer version of the function strcat(s,t) which concatenates the string t to the end of string s.

Code:

```
#include <stdio.h>
#include <string.h>
void my_strcat(char *s, char *t);
int main()
{
    char s[200];
    char t[100];
    printf("enter the  first string (s)\n");
    gets(s);
    printf("enter the  second string (t)\n");
    gets(t);
    my_strcat(s, t);
    printf("concatenated string is \n");
    puts(s);
    return 0;
}
void my_strcat(char *s, char *t)
{
    //increasing  pointer  upto  null  character
    while (*s)
    {
        s++;
    }
    //now assgning string t to string s from ‘\0’
    while ((*s++ = *t++))
```

```
    {
        ;
    }
}
```

Output:

```
cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q6.
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Razas-MacBook-Pro:JUET razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc rs/razakhan/Desktop/JUET/Lab1/"q6
enter the  first string (s)
warning: this program uses gets(), which is unsafe.
sample
enter the  second string (t)
input
concatenated string is
sampleinput
Razas-MacBook-Pro:Lab1 razakhan$
```

Q7. Write the function strend(s,t), which returns 1 if the string t occurs at the end of the string s, and zero otherwise.
Sample Test case1:
Input:
s=”Object Oriented Programming using C++”
t=”Using C++”
Output: 1
Sample Test case2:
Input:
s=”Object Oriented Programming using C++”
t=”Programming”
Output: 0

Code:

```
#include<stdio.h>
#include<string.h>
int strend(char *s,char*t);
int main()
{
    char s[100],t[50];
    printf("enter the string\n ");
    gets(s);
    printf("enter the string to be search\n");
    gets(t);
    printf("%d \n",strend(s,t));
    return 0;
}
int strend(char *s,char *t)
{
    //taking string c to and initialize from
      //length l1-l2 to l1
      int l1,l2,i,k=0;
    char c[20];
    l1=strlen(s);
```

```
    l2=strlen(t);
    for(i=l1-l2;i<=l1;i++)
    {
        c[k++]=s[i];
    }
      //taking last character as null char to c
    c[k]='\0';
     //if c and t are equal than return 1 else 0
    if(strcmp(t,c)==0)
    return 1;
    else
    return 0;
}
```

Output:

```
cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc q7.
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Razas-MacBook-Pro:JUET razakhan$ cd "/Users/razakhan/Desktop/JUET/Lab1/" && gcc /Lab1/"q77 && "/Users/razakhan/Desktop/JUET

enter the string
warning: this program uses gets(), which is unsafe.
 Object oriented program using c++
enter the string to be search
programming
0
Razas-MacBook-Pro:Lab1 razakhan$
```