Govt.College Women University
Faisalabad

PROGRAMMING FUNDAMENTALS

Assignment no 2

Course Code: CSC-311
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Built-in-Functions

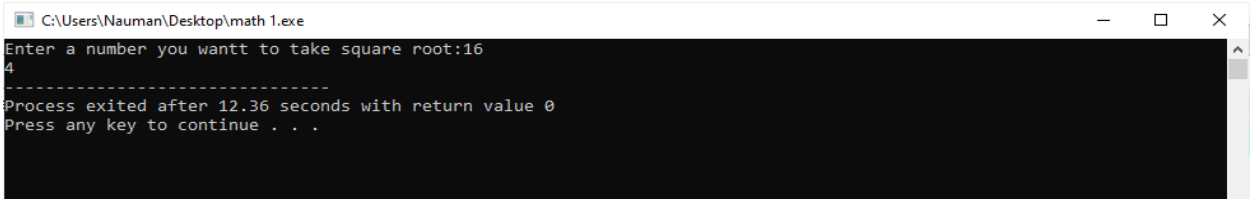
1) Mathematical Built-in Functions (<cmath>)

- **sqrt(x) – square root**

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void scroot(int a)
{
	int r;
	r=sqrt(a);
	cout<<r;
}
int main()
{
	int y;
	cout<<"Enter a number you wantt to take square root:";
	cin>>y;
	scroot(y);
	return 0;
}
```

Output:

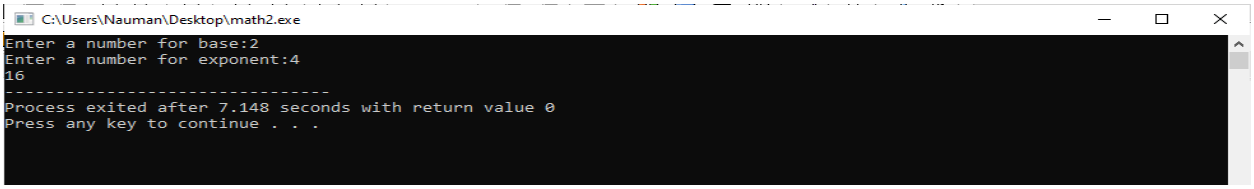


- **pow(x, y) – x raised to the power y**

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void po(int a,int b)
{
	int r;
	r=pow(a,b);
	cout<<r;
}
int main()
{
	int x,y;
	cout<<"Enter a number for base:";
	cin>>x;
	cout<<"Enter a number for exponent:";
	cin>>y;
	po(x,y);
	return 0;
}
```

Output:

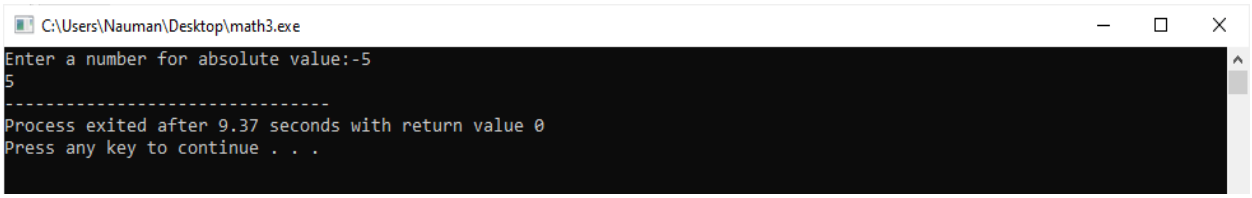


- **abs(x) – absolute value**

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void abusol(int a)
{
	int r;
	r=abs(a);
	cout<<r;
}
int main()
{
	int x;
	cout<<"Enter a number for absolute value:";
	cin>>x;
	abusol(x);
	return 0;
}
```

Output:

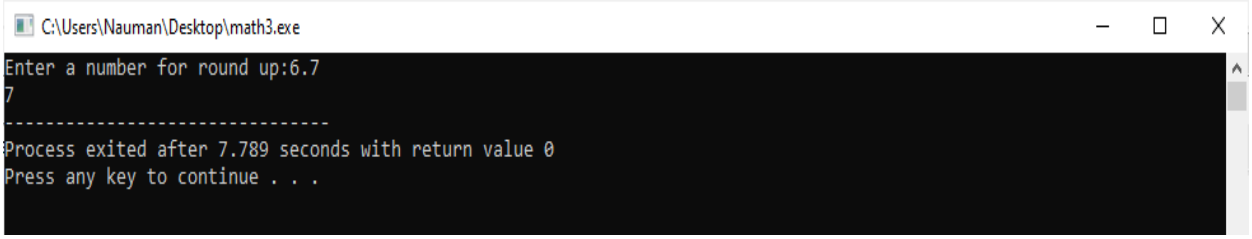


➢ ceil(x) – round up

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void roundup(float a)
{
        float r;
        r=ceil(a);
        cout<<r;
}
int main()
{
        float  x;
        cout<<"Enter a number for round up:";
        cin>>x;
        roundup(x);
        return 0;
}
```

Output:

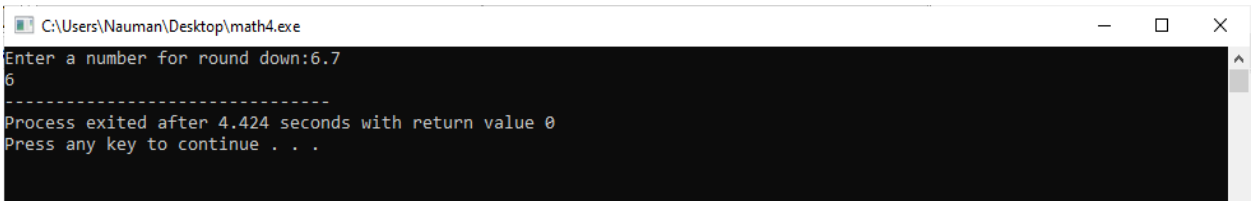


➢ floor(x) – round down

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void rounddo(float a)
{
	float r;
	r=floor(a);
	cout<<r;
}
int main()
{
	float  x;
	cout<<"Enter a number for round down:";
	cin>>x;
	rounddo(x);
	return 0;
}
```

Output:

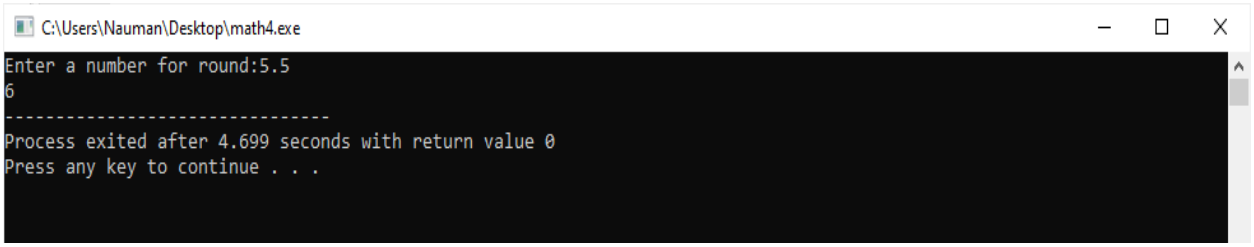


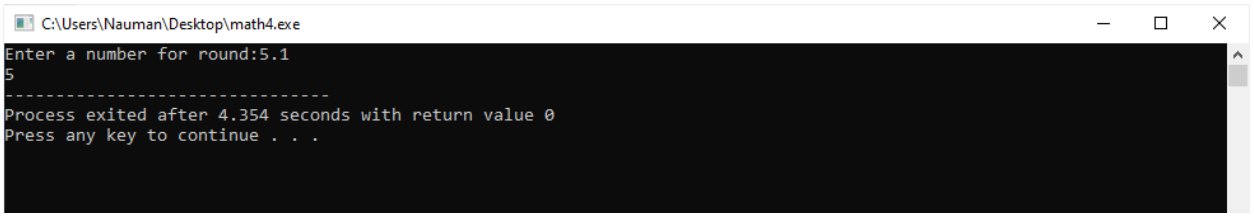
➢ round(x) – nearest integer

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void nint(float a)
{
	float r;
	r=round(a);
	cout<<r;
}
int main()
{
	float  x;
	cout<<"Enter a number for round:";
	cin>>x;
	nint(x);
	return 0;
}
```

Output:



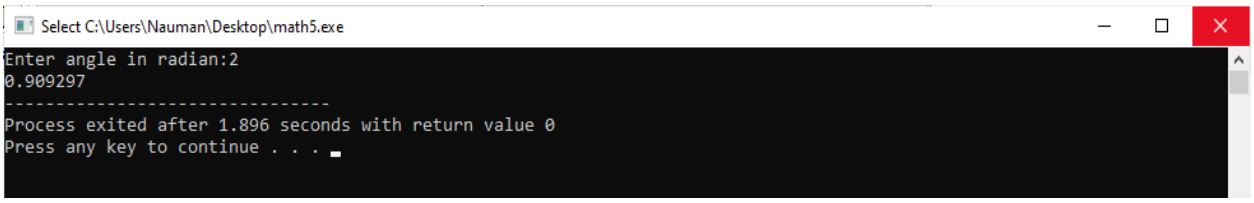


➢ sin(x) – sine

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void sain(float a)
{
	float r;
	r=sin(a);
	cout<<r;
}
int main()
{
	float  x;
	cout<<"Enter angle in radian:";
	cin>>x;
	sain(x);
	return 0;
}
```

Output:

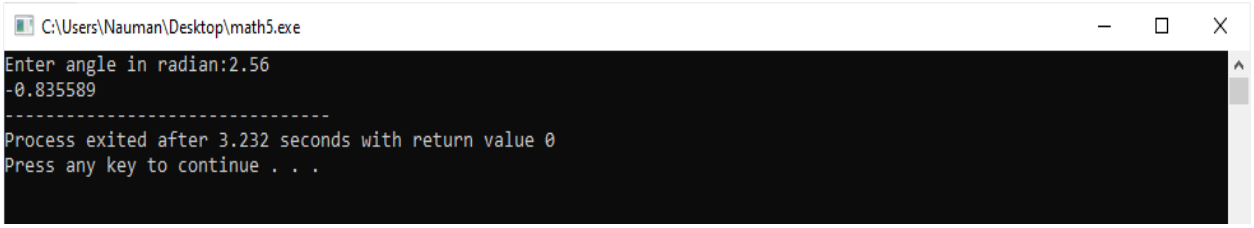


➢ cos(x) – cosine

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void co(float a)
{
	float r;
	r=cos(a);
	cout<<r;
}
int main()
{
	float  x;
	cout<<"Enter angle in radian:";
	cin>>x;
	co(x);
	return 0;
}
```

Output:



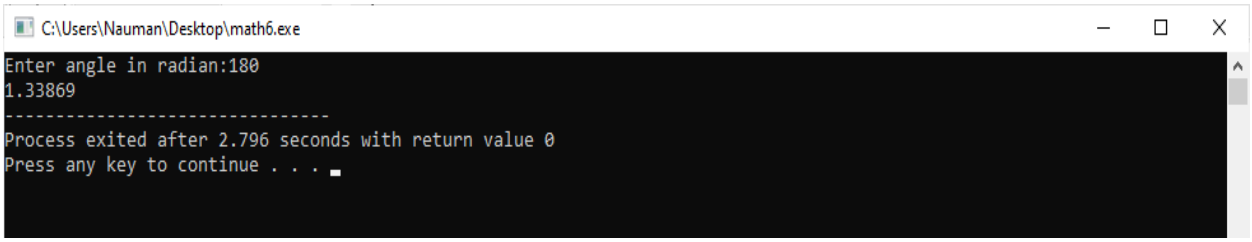
➢ tan(x) – tangent

Code:

```
#include<iostream>
```

```
#include<cmath>
using namespace std;
void ta(float a)
{
	float r;
	r=tan(a);
	cout<<r;
}
int main()
{
	float  x;
	cout<<"Enter angle in radian:";
	cin>>x;
	ta(x);
	return 0;
}
```

Output:



- ## log(x) – natural logarithm

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void lo(int a)
```

```
{
        int r;
        r=log(a);
        cout<<r;
}
int main()
{
        int  x;
        cout<<"Enter number:";
        cin>>x;
        lo(x);
        return 0;
}
```

Output:

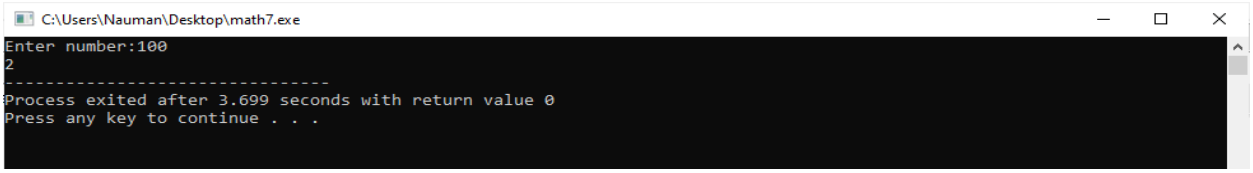
- ## log10(x) – base-10 logarithm

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void lg(float a)
{
        float r;
        r=log10(a);
        cout<<r;
```

```
}
int main()
{
	float  x;
	cout<<"Enter number:";
	cin>>x;
	lg(x);
	return 0;
}
```

Output:



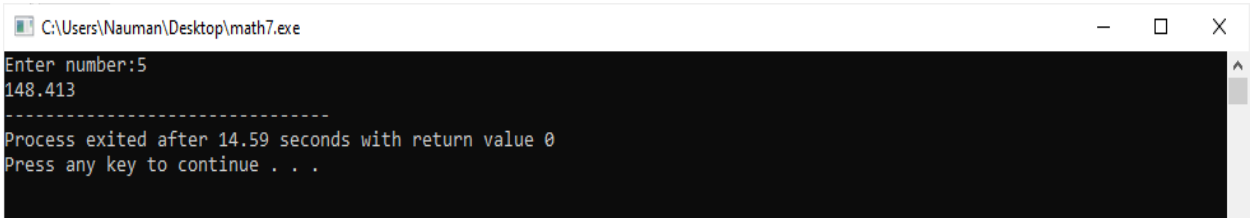
- ## exp(x) – exponential (e^x)

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void expo(float a)
{
	float r;
	r=exp(a);
	cout<<r;
}
int main()
{
	float x;
	cout<<"Enter number:";
```

```
    cin>>x;
    expo(x);
    return 0;
}
```

Output:



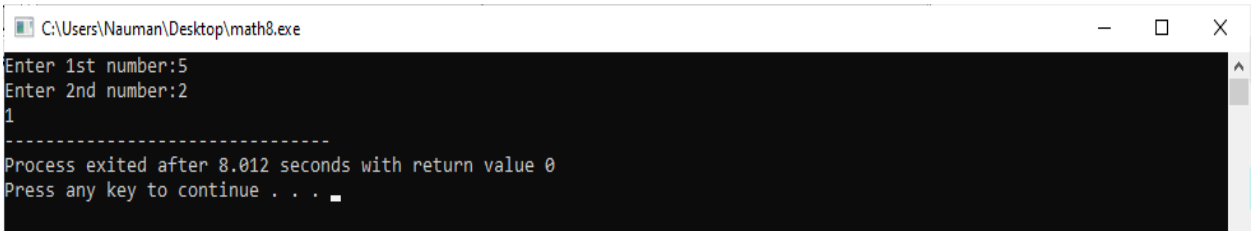
➢ fmod(x, y) – remainder of division

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
void re(float a,float b)
{
    float r;
    r=fmod(a,b);
    cout<<r;
}
int main()
{
    float x,y;
    cout<<"Enter 1st number:";
    cin>>x;
    cout<<"Enter 2nd number:";
    cin>>y;
    re(x,y);
```

```
    return 0;
}
```

Output:



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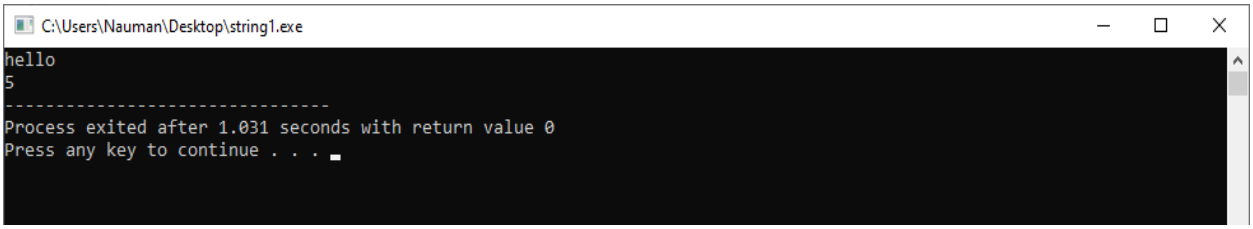
2) String Built-in Functions (<cstring>)

➢ strlen(s) – find length of string

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
    char a[]="hello";
    cout<<a<<endl;
    cout<<strlen(a);
    return 0;
}
```

Output:

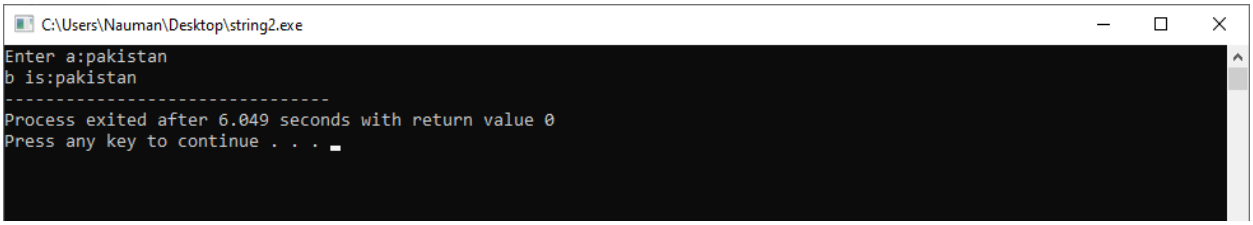


➢ strcpy(a, b) – copy string

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
	char a[10],b[10];
	cout<<"Enter a:";
	cin>>a;
	cout<<"b is:"<<strcpy(b,a);
	return 0;
}
```

Output:



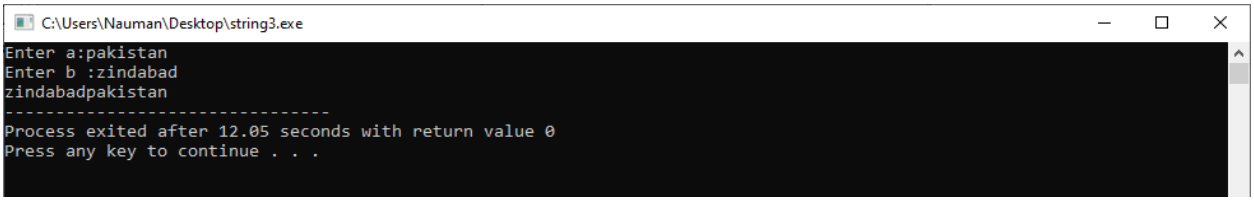
➢ strcat(a, b) – concatenate strings

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
```

```
    char a[20],b[30];
    cout<<"Enter a:";
    cin>>a;
    cout<<"Enter b :";
    cin>>b;
    cout<<strcat(b,a);
    return 0;
}
```

Output:



- ## strcmp(a, b) – compare strings

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
    char a[20],b[30];
    cout<<"Enter a:";
    cin>>a;
    cout<<"Enter b :";
    cin>>b;
    cout<<strcmp(a, b);
    return 0;
}
```

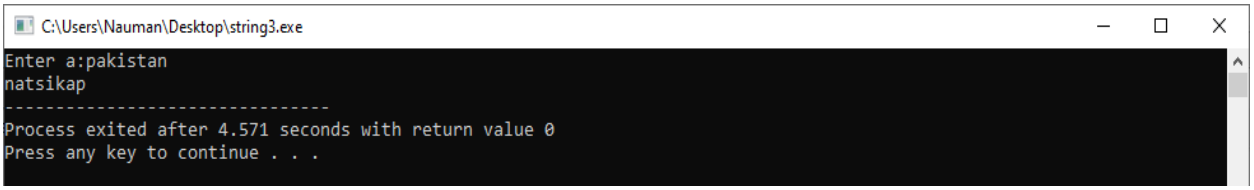
Output:

➢ strrev(s) – reverse string (compiler dependent)

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
	char a[20];
	cout<<"Enter a:";
	cin>>a;
	cout<<strrev(a);
	return 0;
}
```

Output:



➢ strupr(s) – convert to uppercase (compiler dependent)

Code:

```
#include<iostream>
#include<cstring>
```

```
using namespace std;
int main()
{
	char a[20];
	cout<<"Enter a:";
	cin>>a;
	cout<<strupr(a) ;
	return 0;
}
```

Output:

- **strlwr(s) – convert to lowercase (compiler dependent)**

Code:

```
#include<iostream>
#include<cstring>
using namespace std;
int main()
{
	char a[20];
	cout<<"Enter a:";
	cin>>a;
	cout<<strlwr(a)  ;
	return 0;
}
```

Output:

---

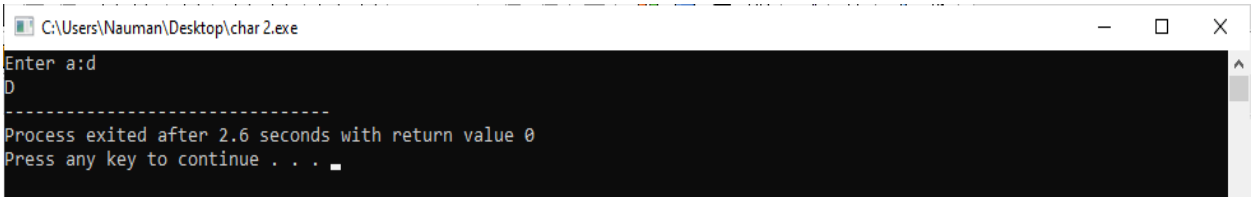
3) Character Handling Functions (<cctype>)

➢ toupper(c) – change to upper case

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
	char a;
	cout<<"Enter a:";
	cin>>a;
	cout<<(char)toupper(a) ;
	return 0;
}
```

Output:



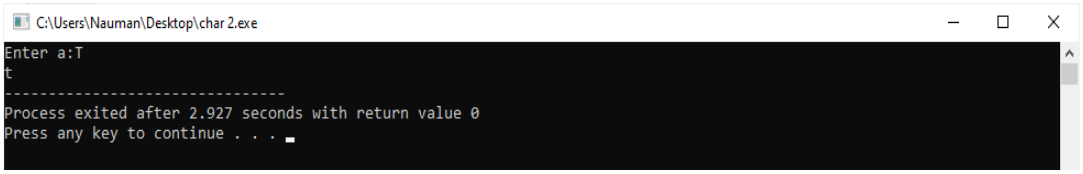
➢ tolower(c) – change to lower case

Code:

```
#include<iostream>
```

```
#include<cctype>
using namespace std;
int main()
{
	char a;
	cout<<"Enter a:";
	cin>>a;
	cout<<(char)tolower(a) ;
	return 0;
}
```

Output:



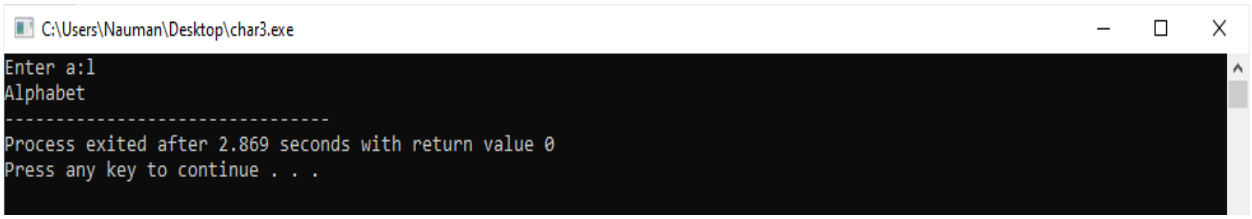
➢ isalpha(c) – check if alphabet

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
	char a;
	cout<<"Enter a:";
	cin>>a;
	if((char)isalpha(a))
	cout<<"Alphabet";
	else
	cout<<"Not an alphabet";
```

```
    return 0;
}
```

Output:



➢ isdigit(c) – check if digit

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
    int a;
    cout<<"Enter a:";
    cin>>a;
    if(isdigit(a))
    cout<<"Digit";
    else
    cout<<"Not an digit";
    return 0;
}
```

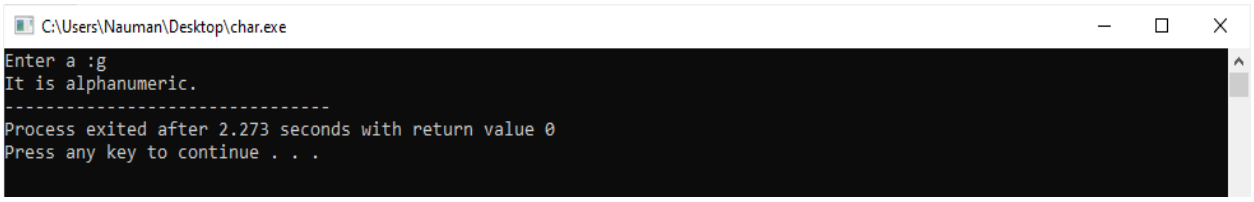
Output:

➢ isalnum(c) – check if alphanumeric

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
	char a;
	cout<<"Enter a :";
	cin>>a;
	if(isalnum(a))
	cout<<"It is alphanumeric.";
	else
	cout<<"It is not alphanumeric.";
	return 0;
}
```

Output:



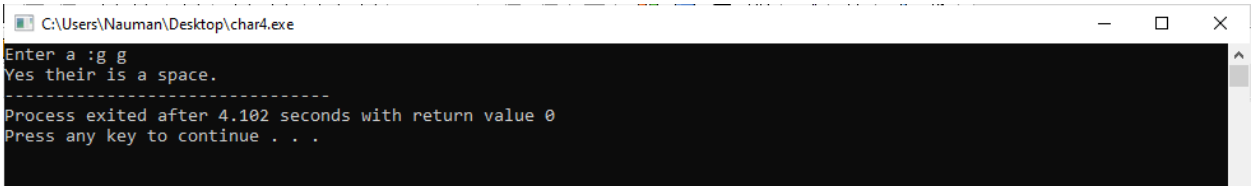
➢ isspace(c) – check if space

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
```

```
    char a;
    cout<<"Enter a :";
    cin>>a;
    if(isspace(a))
    cout<<"Yes their is a space.";
    else
    cout<<"Yes their is a space.";
    return 0;
}
```

Output:



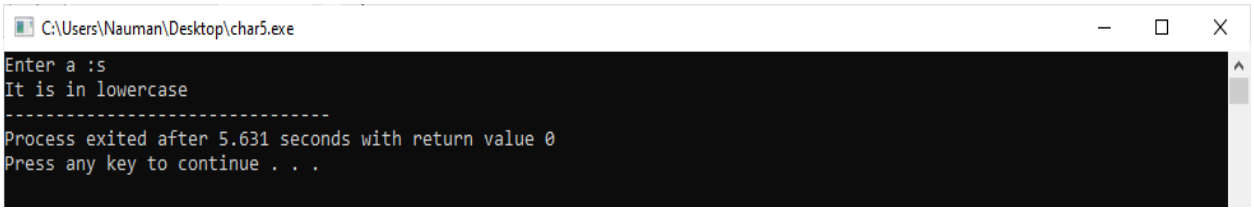
➢ isupper(c) – check upper case

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
    char a;
    cout<<"Enter a :";
    cin>>a;
    if(isupper(a) )
    cout<<"It is in UPPERCASE.";
    else
    cout<<"It is in lowercase";
```

```
    return 0;
}
```

Output:

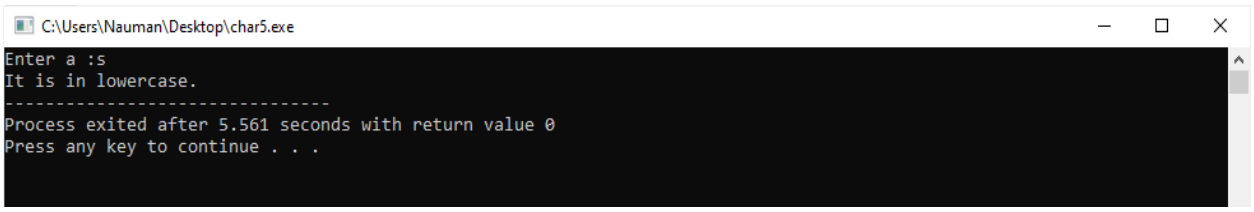


➢ islower(c) – check lower case

Code:

```
#include<iostream>
#include<cctype>
using namespace std;
int main()
{
    char a;
    cout<<"Enter a :";
    cin>>a;
    if(islower(a))
    cout<<"It is in lowercase.";
    else
    cout<<"It is in UPPERCASE";
    return 0;
}
```

Output:



4) Input / Output Functions (<iostream>)

➢ cin – input

Code:

```
#include<iostream>
using namespace std;
int main()
{
	int a,b;
	cout<<"Enter 1st number: ";
	cin>>a;
	cout<<"Enter 2nd number:";
	cin>>b;
	cout<<a+b<<endl;
	cout<<a*b;
	return 0;
}
```

Output:

➢ cout – output

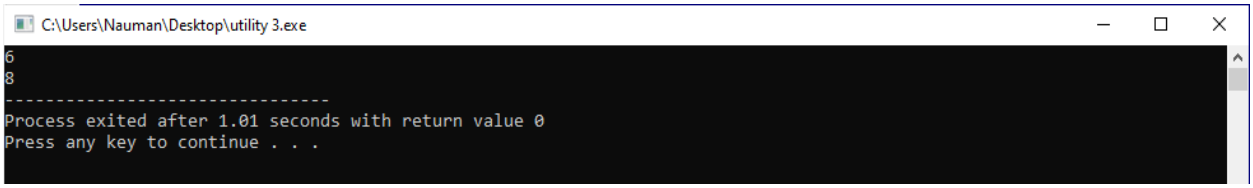
Code:

```
#include<iostream>


using namespace std;
```

```
int main()
{
	int a=4,b=2,sum,mul;
	sum=a+b;
	mul=a*b;
	cout<<sum<<endl;
	cout<<mul;
	return 0;
}
```

Output:

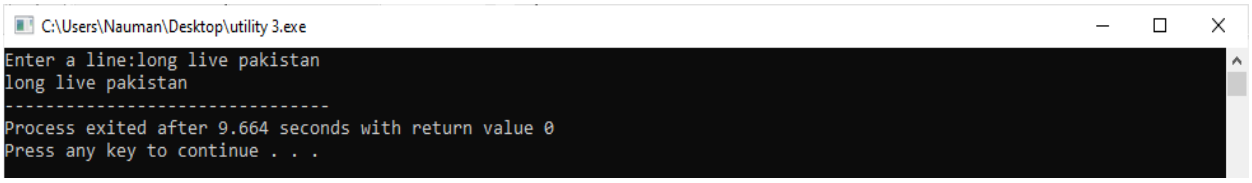


- **getline(cin, s) – input a complete line**

Code:

```
#include<iostream>
using namespace std;
int main()
{
	string  a,b;
	cout<<"Enter a line:";
	getline(cin,a);
	cout<<a;
	return 0;
}
```

Output:



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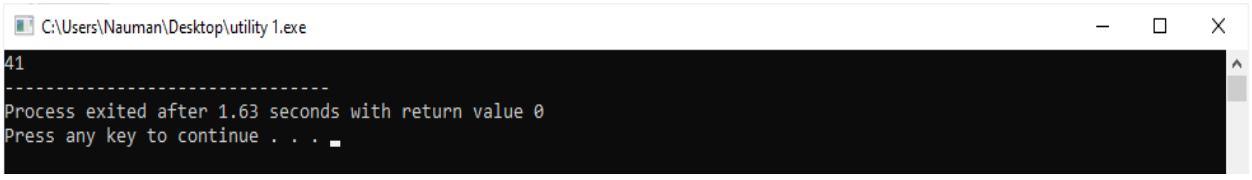
5) General Utility Functions (<cstdlib>)

➢ rand() – generate random number

Code:

```
#include<iostream>
#include<cstdlib>
using namespace std;
int main()
{
	int r;
	r=rand();
	cout<<r;
	return 0;
}
```

Output:



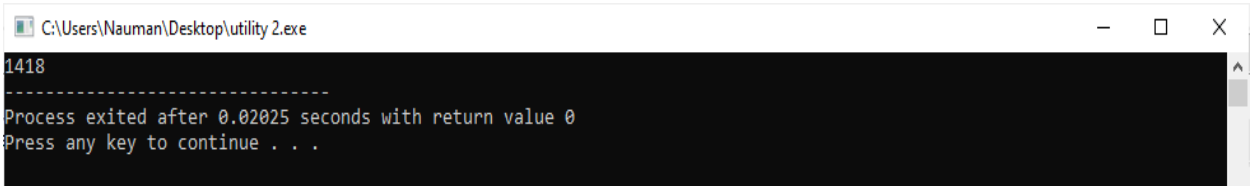
➢ srand() – set seed for random number

Code:

```
#include<iostream>
#include<cstdlib>
```

```
#include<ctime>
using namespace std;
int main()
{
	int r;
	srand(time(0));
	r=rand();
	cout<<r;
	return 0;
}
```

Output:



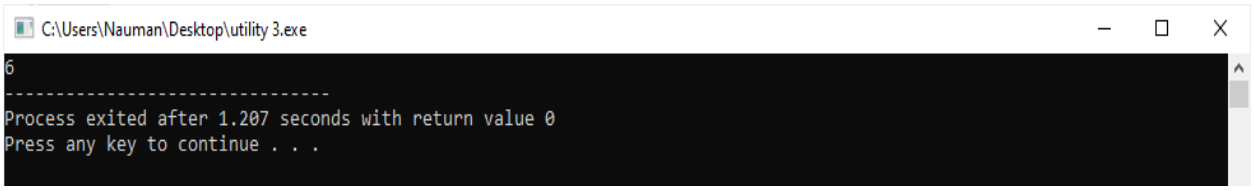
➢ exit() – terminate program

Code:

```
#include<iostream>
#include<cstdlib>
using namespace std;
int main()
{
	int a=4,b=2,sum,mul;
	sum=a+b;
	mul=a*b;
	cout<<sum;
	exit(0);
	cout<<mul;
```

```
    return 0;
}
```

Output:



➢ system() – run system command

Code:

```
#include<iostream>
#include<cstdlib>
using namespace std;
int main()
{
    int a=4,b=2,sum,mul;
    sum=a+b;
    mul=a*b;
    system("pause");
    cout<<sum<<endl;
    cout<<mul;
    return 0;
}
```

Output: