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Paper :	Programming Fundamentals		Name	Junaid Anwar
Program:	BS (CS & SE)		ID	6869

Note: I write All the Code in DevC++ Before pasting here .

Student Id # 6869   Student Name : Junaid anwar

Q.1

a) What is the purpose of ***if statement***? Discuss its two different forms with examples.

Answer: The If statement is used to check the situation and if the situation is correct, it uses a block which is called if block that include some statement in which execute incase of if statement is correct , otherwise we are processing another block called else block. in case of if block is not true the statement forward to else block.

Forms of if statement:

a) Simple if statement: The general form is :

if (test expression)

{ statement-block; }

statement-x;

Example:
```c
#include <stdio.h>
int main()
{
    int x = 20;
    int y = 22;
    if (x<y)
    {
        printf("Variable x is less than y");
    }
    return 0;
}
```

B) The if---else statement The general form is :

if(test expression)

{ true block statements; }

else { false block statements; }

statement-x;

Example:
```c
#include <stdio.h>
int main()
{
    int x = 20;
    int y = 22;
    if (x<y)
    {
        print("Variable x is less than y");
    }
    else {
            print("The Variable x is grater then y")      } ;

}
```

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b)   Write a C++ program toread two numbers from keyboard and then find the
      LARGEST number of them.

      Answer: The following is the C++ program in which user enter two variables and the
      program execute and then display to the user that which variable is grater;

```cpp
#include <iostream>
using namespace std;

int main()
{
    int number1, number2;
    cout<<"Enter first number:";
    cin>>number1;
    cout<<"Enter second number:";
    cin>>number2;
    if(number1>number2)
    {
        cout<<"First number "<<number1<<" is the largest";
    }
    else
    {
        cout<<"Second number "<<number2<<" is the largest";
    }
    return 0;
}
```

Q.2 a) What are the Logical Operators? Explain them.

Answer : Logical operators allow a program to make a decision based on multiple condition it is used to determine the logic between variables or values.

The following are logical operators:

A) (&&) logical And: It return the value true if both values are true ;

Example: x<5 **&&** x<10

```cpp
#include <iostream>
using namespace std;

int main() {
 int x = 5;
 int y = 3;
 cout << (x > 3 && x < 10);
// returns true (1) because 5 is greater than 3 AND 5 is less than 10
 return 0;
}.
```

B) (||) logical Or: Returns true if one of the statements is true ;

Example : x <5 || x<100;

```cpp
#include <iostream>
using namespace std;

int main() {
 int x = 5;
 int y = 3;
 cout << (x > 3 || x < 4);
 return 0;
}
```

C) (!) logical not: It Reverse the result, returns false if the result is true;

Example:!(x < 5 && x < 10);

```cpp
#include <iostream>
using namespace std;

int main() {
 int num1 = 5;
 int num2 = 3;
```

```
cout << (!(num1 > 3 && num2 < 10));
 return 0;
}
```

----

b)   Write a C++ program to get Temperature in Fahrenheit **F** and then find the
      Atmosphere according to the below rules:

- If temperature **F** is above 40 degree Fahrenheit then display………………….Very Hot.
- If temperature **F**is between 35 & 40 degree Fahrenheit then display………Tolerable.
- If temperature **F** is between 30 & 35 degree Fahrenheit then display………Warm.
- If temperature **F** is less than 30degree Fahrenheit then display……………….Cool.

Answer:

```
1. #include<iostream>
2. using namespace std;
3.
4. int main()
5. {
6.     float fahrenheit;
7.
8.     cout << "Enter the temperature in FAHRanhite : ";
9.     cin >> fahrenheit;
10.            if(fahrenheit> 40){
11.       cout<<"Its to Hot";
12.               }
13.               else if(fahrenheit <=40 && fahrenheit >=35 ){
14.                   cout<<"Tolerable";
15.               }
16.               else if(fahrenheit => 30 && fahrenheit <35){
17.                   cout<<"warm";
18.               }
19.               else if(fahrenheit <30){
20.                   cout<<"Cool"
21.               }
22.
23.          return 0;
}
```

Q.3   a)   What does **Looping** mean? Explain different loops in C++.

Answer : a loop is a programming structure that repeats a sequence of instructions
until a specific condition is met. Programmers use loops to cycle through values, add
sums of numbers, repeat functions, and many other things.There are three types of
loops in C++ which are given below:

1) while loop: A while loop is the simplest form of a programming loop. It states that
while a condition is valid, keep looping.

Example:

```
int i = 0;
while (i < 5) {
  cout << i <<;
  i++;
}
```

2) Do while loop: The main difference between a do-while loop and while loop is in the do-while loop the condition is tested at the end of the loop body;

Example:

```cpp
int i = 0;
do {
  cout << i << "\n";
  i++;
}
while (i < 5);
```

3)For Loop : we use for loop in that conditions When we know exactly how many times you want to loop through a block of code;

Systax for LooP:

for (*statement 1*; *statement 2*; *statement 3*) {
 // code block to be executed
}

Statement 1 is executed (one time) before the execution of the code block.

Statement 2 defines the condition for executing the code block.

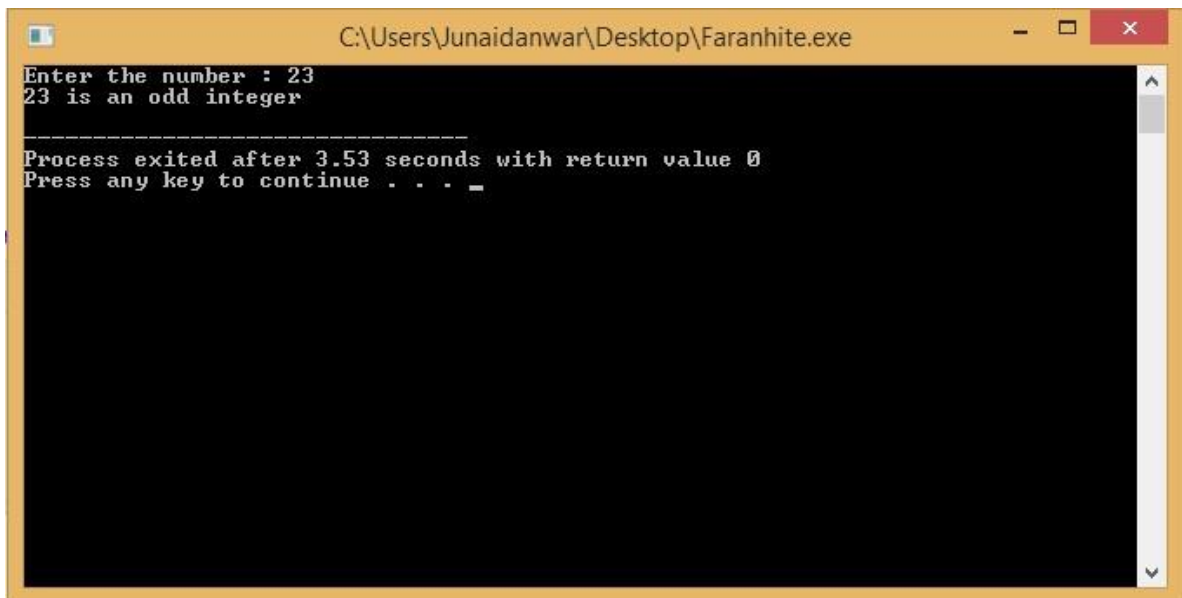**Statement 3** is executed (every time) after the code block has been executed.

Example :

```cpp
  for (int i = 0; i < 5; i++) {
  cout << i << "\n";
}
```

----

b) Write a C++ program toread a number from keyboard and then determine whether it is ***Even or Odd*** number?

Answer: The following is block of code to find the value is even or odd;

```cpp
1. #include<iostream>
2. using namespace std;
3.
4. int main()
5. {
6.     int number, remainder;
7.
8.     cout << "Enter the number : ";
9.     cin >> number;
10.            remainder = number % 2;
11.            if (remainder == 0)
12.                cout << number << " is an even integer " << endl;
13.            else
14.                cout << number << " is an odd integer " << endl;
15.
16.            return 0;
17.        }
```

Result Q3 -b:
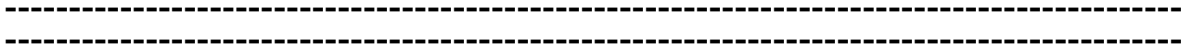
Q.4   a)   What is the purpose of using ***break and continue statements***?

Answer: Break statement is used to get out from switch statement,

Of the programming is executing in switch statement and reach to the specified task then stop the execution and don't execute more code below ;for that purpose we use break statement,

Example:

```
#include <iostream>
using namespace std;

int main () {
   // local variable declaration:
   char grade = 'D';

   switch(grade) {
     case 'A' :
        cout << "Excellent!" << endl;
        break;
     case 'B' :
     case 'C' :
        cout << "Well done" << endl;
        break;
     case 'D' :
        cout << "You passed" << endl;
        break;
```

```cpp
        case 'F' :
            cout << "Better try again" << endl;
            break;
        default :
            cout << "Invalid grade" << endl;
    }
    cout << "Your grade is " << grade << endl;

    return 0;
}
```

In the above program if case A is Execute is valid the program stop and no more parts will executes .

Continues Statement:

The continue statement breaks one iteration (in the loop), if a specified condition occurs, and continues with the next iteration in the loop

Example:

```cpp
#include <iostream>
using namespace std;

int main() {
  for (int i = 0; i < 10; i++) {
    if (i == 4) {
      continue;
    }
    cout << i << "\n";
  }
  return 0;
}
```

The above program skip the value of '4'.

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b)   Write a C++ program to find the sum of the following numbers:

1+2+3+………+10;

Answer: To find sum of the above numbers we use for loop:

```cpp
#include <iostream>
using namespace std;
int main()
{
  int i,sum=0;
```

```
    for (i = 1; i <= 10; i++)
    {
        cout << i << " ";
                sum=sum+i;
    }
    cout << " The sum of first 10 natural numbers: "<<sum << endl;
}
```

The Result is "**55".**

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Q.5   Explain the the following with proper examples
a) C++ Character set
Answer: Character sets are that valid characters that a language can recognize it self
while we enter it in c++ programming. A character represents any letter, digits, or any
other sign. The following are set of characters used in C++;
1. Letters : A-Z,a-z
2. Degits: 0-9;
3. Special Symbols: Space + - * / ^ \ ( ) [ ] { } = != < > . ' " $, ; : % ! & _ #
   <= >= @
   Example:

   #include<iostream.h>
   #include<conio.h>
   void main()
   {
           clrscr();
           char letter, digit, special

           cout<<"Enter a Letter : ";
           cin>>letter;
           cout<<"You entered a letter '"<<letter<<""<<"\n";

           cout<<"Enter a Digit : ";
           cin>>digit;
           cout<<"You entered a digit '"<<digit<<""<<"\n";

           cout<<"Enter a special character : ";
           cin>>special;
           cout<<"You entered a special character '"<<special<<""<<"\n";
           getch();
   }

```

**Answer:** Constants in C++ are used when you don't want to change the key word again in programming of that purpuse we use **cont** keyword to not override the existing value the const value will be unchangeable and read only.

Example:
```
#include <iostream>
using namespace std;

int main() {
  const int minutesPerHour = 60;
  const float PI = 3.14;
  cout << minutesPerHour << "\n";
  cout << PI;
  return 0;
}
```
In the Above Example Const is KeyWord, Int is dataType,MinutesPerHour is Name, 60 is value(Unchangeable).

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c) Variables:

**Answers:** variables are data types for storing data or we can say that variables is container for storing data.

The following are Types of variables ;

**1) Int :** It stores integers (whole numbers), without decimals, such as 12334 or -12334.

**2)double :** it stores floating point numbers, with decimals, such as 23.99 or -23.99

**3)char :** It stores single characters, such as 'a' or 'B'. Char values are surrounded by single quotes

**4) String :** stores text, such as "Hello World". String values are surrounded by double quotes .

**5)Boolean:** it stores values with two states: true or false

**-----------------------------------------------------------**

d) Keywords

**Answer:** Keyword is a predefined word in C++ library with a fixed meaning we cannot used such words as variables or name of data types . C++ Language supports more than 64 keywords.

The following are few keywords used in c++ languges.


**If ,switch ,int ,auto ,for ,char ,compl ,static ,while , do ,and, not ,this ,else, true ,or ,public ,false etc**

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e) Relational Operators

**Answer:** A relational operator is used to check the relationship between two operands. For example, num1 > num2.

The following are relational operators used in c++;

1. ==   Equal to.
2. !=   Not Equal To.
3. >    Grater then.
4. <    less then.
5. >=  grater then or Equal to.
6. <=   less then or equal to.


☺*********The End**************☺