**Experiment: 3**

PART A

(PART A: TO BE REFFERED BY STUDENTS)

**Aim:** **To study Decision Statements in C++ programs.**

**Learning Outcomes: Learner would be able to**

1. Interpret the scenario to decide on selection blocks.
2. Explain using algorithm and flowchart conditional constructs as per scenario.

**Task1: Find the outputs without using codeblocks and provide proper justification.**

1. int a=100;

if(a>10)

cout<<”M.S. Dhoni”;

else if(a>20)

cout<<”M.E.K. Hussey”;

else if(a>30)

cout<<”A.B. De Villiers”;

1. int i=10;

if(i==10)

{

if(i<15)

cout<<”i is smaller than 15”;

if(i<12)

cout<<”i is smaller than 12 too”;

else

cout<<”i is greater than 15”;

}

1. int main()

{

int n=500;

if(n%10==0)

{

cout<<”Correct”;

}

else

{

cout<<”Wrong”;

}}

1. int main()

{

int n=500;

if(n%9==0);

{

cout<<”Correct”;

}

cout<<”Wrong”;

}

1. int main()

{

if(0) {cout<<”First Statement”;}

if(-10) {cout<<”Second Statement”;}

if(80-10\*8) {cout<<”Third Statement”;}

}

**Task 2:**  Write a C++ program for performing below task. Given an integer n, perform the following conditional actions:

If n is odd, print Weird

If n is even and in the inclusive range of 2 to 5, print Not Weird

If n is even and in the inclusive range of 6 to 20, print Weird

If n is even and greater than 20, print Not Weird

Sample Input = 3 Sample Output Weird

Sample Input =24 Sample Output Not Weird

**Task 3:** Write a C++ program that determines if a year is a leap year.

A leap year is every 4 years, but not every 100 years, then again, every 400 years.

Sample Input: 2019 Sample Output: Not a leap year

Sample Input =2016 Sample Output: Leap year

Sample Input: 1800 Sample Output: Not a leap year

Sample Input =2000 Sample Output: Leap year

**Task 4:**

Write a C++ program to check whether a given number is divisible by 2 and 3 but not divisible by 5.

**Theory:**

**Decision Making Statements:** Decision making statements are the statements that are used to verify a given condition and decides whether a block of statements gets executed or not based on the condition result.

Two decision making statements are if statement and switch statement.

**Simple if statement:** used when we have only one option that is executed or skipped based on a condition.

|  |  |
| --- | --- |
|  | **// Test whether given number is divisible by 5**  #include <iostream>  void main()  {  int n;  cout<<"Enter any integer number ";  cin>>n;  if(n%5 == 0)  cout<<"Divisible by 5\n";  cout<<"statement does not belong to if!!!";  } |

**If-else statement:** used when we have two options and only one option has to be executed based on a condition result (TRUE or FALSE).

|  |  |
| --- | --- |
| http://btechsmartclass.com/CP/images/if-else-statement-syntax.png | **// Test whether given number is even or odd**  #include <iostream>  void main()  {  int n;  cout<<"Enter any integer number ";  cin>>n;  if(n%2 == 0)  cout<<"Given number is EVEN\n";  else  cout<<"Given number is ODD\n";  } |

**Nested if statement:** Writing if statement inside another if statement is called nested if statement.

|  |  |
| --- | --- |
| http://btechsmartclass.com/CP/images/nested-if-statement-syntax.png | **//  Test whether given number is even or odd if it is below 100**  #include <iostream>  void main()  {  int n;  cout<<"Enter any integer number ";  cin>>n;  if(n < 100)  {  cout<<"Given number is below 100\n";  if(n%2 == 0)  cout<<"And it is EVEN";  else  cout<<"And it is ODD";  }  else  cout<<"Given number is not below 100"; } |

**If-else-if statement (if-else ladder):** The if-else-if statement can be defined using any combination of simple if & if-else statements.

|  |  |
| --- | --- |
| http://btechsmartclass.com/CP/images/if-else-if-statement-syntax.png | **// Find the largest of three numbers**  #include <iostream>  void main()  {  int a, b, c ;  cout<<"Enter any three integer numbers: ";  cin>>a>>b>>c;  if(a>=b && a>=c)  cout<<a<< is the largest number";  else if(b>=a && b>=c)  cout<<b<< is the largest number";  else  cout<<c<< is the largest number";  } |

**Note: If the expression value or direct value is zero the condition becomes FALSE otherwise becomes TRUE**.

PART B

(PART B: TO BE COMPLETED BY STUDENTS)

Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the portal at the end of the practical. The filename should be **PPS\_batch\_rollno\_experimentno Example: PPS\_B2\_B001\_Exp1**

|  |  |
| --- | --- |
| **Roll No.:** | **Name:** |
| **Prog/Yr/Sem:** | **Batch:** |
| **Date of Experiment:** | **Date of Submission:** |

Task 1:

Task 2:

Task 3:

Task 4:

**Conclusion (Learning Outcomes):** Reflect on the questions answered by you jot down your learnings about the Topic: Conditional Statement.

**Home Work Questions:**

1. Write a C++ program to test whether a given character is capital or small letter and change small letter to capital letter and vice versa