

"Dissemination of Education through Knowledge, Science and Culture".  
--Shikshanmaharshi Dr. Bapuji Salunkhe

**Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's**  
**Padmabhushan Dr. Vasanthaodada Patil**

**Mahavidyalaya, Tasgaon**

Tal. Tasgaon. Dist. Sangli-416 312 (Maharashtra)

(Affiliated to Shivaji University, Kolhapur)

**DEPARTMENT OF**  
**COMPUTER-APPLICATION**  
**(B.C.A.)**

(2019-20)

**A CERTIFICATE COURSE IN**

**C++ Programming Using Linux**

“Dissemination of Education through Knowledge, Science and Culture”.

--Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

Padmabhushan Dr.Vasatraodada Patil

Mahavidyalaya, Tasgaon

Tal. Tasgaon. Dist. Sangli-416 312 (Maharashtra)

(Affiliated to Shivaji University, Kolhapur)

**Title of the Certificate Course**

“ C++ Programming using Linux”

Organizer:Department Of Computer  
Science&Applicationand  
Internal Quality Assurance cell (IQAC) PDVP College,  
Tasgaon

Total No Of Student Participated:71

Total no of faculty conducted : 06

Kumbhar V.T.  
Course Co-ordinator,  
Career Oriented Course,

**8 AUGUST 2019**

To,  
The Principal,  
P D V P College,  
Tasgaon- 416 312.


Sub: - Regarding Permission to commencement of (COC) Certificate course.....

Respected Sir,

With reference to above subject, our college is going to start a certificate course entitled **“C++ Programming using Linux”** for B.C.A. (Computer students) in this current academic year. So, I request you to kindly give me permission to commencement above said course.

Please consider the same and oblige.

Thanking you



**HOD**  
**Head,**  
Department of Computer Science  
Pa. Kumbhar Dr. Vasantnandada Purohit  
Mahavidyalaya, TASGAON, Dist. Sangli

“Dissemination of Education for Knowledge, Science and Culture”

-Shikshanmaharashi Dr.Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

**Padmabhushan Dr.vasatraodada Patil Mahavidyalaya, Tasgaon**

**DEPARTMENT OF COMPUTER APPLICATION**

The meeting of C.O.C. for preparation of syllabus of a certificate course **C++ Programming using Linux** was held on Monday 08/08/2019. The following members of the committee we represent for the preparation of syllabus

Syllabus for said course has been prepared and the copy of the same is enclosed here with for your kind information and further action. Thanking you,

Sr. No.	Name	Designation	College Name	Sign
1	Mr.Kumbhar V.T.	Chairman	P.D.V.P.College, Tasgaon	
2	Mirs.Kumbhar N.V.	Member	P.D.V.P.College, Tasgaon	
3	Mr. Santinath Patil	Member	K.W.C.College, Tasgaon	
4	Mr.Toshif Mulla.	Member	Adarsh College, Vita	
5	Mr. Sandeep Patil.	Member	A.C.S.College, Palus	
6	Mr. Wagh A.A.	Member	P.D.V.P.College, Tasgaon	

HOD  
Head,  
Department of Computer Science  
Shri Swami Vivekanand Shikshan Sanstha  
Padmabhushan Dr. Vasatraodada Patil  
Mahavidyalaya, TASGAON, Dist. Kolhapur

Prin. Dr. Milind S. Hujare  
Principal  
Padmabhushan Dr. Vasatraodada Patil  
Mahavidyalaya, Tasgaon (Dist. Kolhapur)



-नामधेय अ. संस्थेची संस्था  
 श्री स्वामी विवेकानंद शिरोधार संस्था, किलहजर तालुका,  
**PADMAHUSHAN DR. VASANTRAODADA PATIL MAHAVIDYALAYA**  
**TASGAON**, Dist. Sangli, Pin-416 312 ☎ STD : 02346-250485, 250575 FAX : 02346-250575  
 (AFFILIATED TO SHIVAJI UNIVERSITY)  
 E-mail : san.pdgm.tas@gmail.com Website : pdpcollege.tasgaon.com  
 ✉ Established Year - June 1962 ✉ P.S. No. 14 ✉ College No. 202-10-001 ✉ Sr. College Code No. 20024 Jn-C-8

<b>Dr. Rajendra Kulkarni</b> President	<b>Mr. Chandrahar Dadas Patil</b> President	<b>Mr. Akshayraj Kulkarni</b> Chairman	<b>Mr. Mrs. Shashibhai M. Sawade</b> Secretary	<b>Dr. A. S. Kumbhar</b> Principal
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Ref. No.: PDVPM/7

Date :

**To,**  
**Mr. V. T. Kumbhar,**  
**Assistant Professor,**  
**Department of Computer Application,**  
**P. D. V. P. College, Tasgaon.**

**Subject - Regarding Meeting of BOS for Syllabus Preparation.....**

**Respected Sir/Madam,**

With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled "C++ Programming Using Linux" to be conducted by The Department of Computer Application in our college during the academic year 2019-20.

The meeting of BOS is conveyed on 01<sup>st</sup> August 2019 for the preparation of syllabus of Certificate course entitled "C++ Programming Using Linux". So, you are kindly requested to attend the meeting at 11:00 a.m. in IQAC Office of the college. Thanking you,

Yours Faithfully,

  
 (Dr. A. S. Kumbhar)  
 IQAC Director





Shri Swam Vivekanand Shiksha Sanstha, Kolhapur Sanstha,  
**PADMABHUSHAN DR. VASANTRAOBADA PATIL MAHAVIDYALAYA**  
**TASGAON**, Dist. Sangli, Pin 416 212. ☎ STD : 02346-250 885, 250575 FAX : 02346-250575  
 (AFFILIATED TO SHIVAJI UNIVERSITY)  
 E-mail : [vcn.pdpm.tas@gmail.com](mailto:vcn.pdpm.tas@gmail.com) Website : [pdpcollegetasgaon.com](http://pdpcollegetasgaon.com)  
 Established Year - June 1962 | P.B. No. 143 | College No. J23-10-001 | Sr. College Code No. 315231 a-c-8

<b>Dr. Dnyanesh Kumbhar</b> President	<b>Mr. Chandrabhai (Chandu) Patil</b> President	<b>Mr. Abhayaanna Kulkarni</b> Chairman	<b>Mr. Mrs. Shubhangi M. Sawade</b> Secretary	<b>Dr. S. B. Kumbhar</b> Principal
--	--	--	--	---------------------------------------

Ref. No.: PDVPMT/ \_\_\_\_\_ Date: \_\_\_\_\_

To,  
**Mrs. N. V. Kumbhar,**  
**Assistant Professor,**  
**Department of Computer Application,**  
**P. D. V. P. College, Tasgaon**

**Subject - Regarding Meeting of BOS for Syllabus Preparation .....**

**Respected Sir/Madam,**  
 With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled "C++ Programming Using Linux" to be conducted by The Department Computer Application in our college during the academic year 2019-20.

The meeting of BOS is conveyed on 01<sup>st</sup> August 2019 for the preparation of syllabus of Certificate course entitled "C++ Programming Using Linux". So, you are kindly requested to attend the meeting at 11:00 a.m. in IQAC Office of the college.

Thanking you,  
 Yours Faithfully,

  
 (Dr. N. A. Kulkarni)  
  
 (Mr. Chandrabhai Patil)

-Masthead 11, eight page



MAAC Accredited 1<sup>st</sup> Grade (2.18)

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur Sanchik  
**PADMABHUSHAN DR. VASANTRAOGADA PATIL MAHAVIDYALAYA**  
**TASGAON, Dist. Sangli, Pin 416 312** | ☎: STD : 02346-250-665, 290575 FAX: 02346-250575  
**(AFFILIATED TO SHIVAJI UNIVERSITY)**  
 E-mail : san.pdvpm.tas@gmail.com Website : pdvpcollege.tasgaon.com  
 Established Year - June 1982 | P.B. No. 148 | College No. J22-10-001 | Sr. College Code No. B2024 J-C-8

<b>Dr. Raju Kulkarni</b> P.E.T. Founder	<b>Mr. Chaitanya Dada Patil</b> P.E.T. President	<b>Mr. Maheshwari Suresh</b> M.A. Chairman	<b>Mr. Mr. Shikhand M. Duvade</b> M.A., P.T. Secretary	<b>Dr. K. S. Kumbhar</b> P.E.T., P.H.D. Principal
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Ref. No.: PDVPMT/ \_\_\_\_\_ Date: \_\_\_\_\_

**To,**  
**Mr. Santinath Patil,**  
**Assistant Professor,**  
**Department of Computer Application,**  
**K. W. C College Sangli**

**Subject: - Regarding Meeting of BOS for Syllabus Preparation .....**

**Respected Sir/Madam,**

With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled “C++ Programming Using Linux” to be conducted by The Department of Computer Application in our college during the academic year 2019-20. The meeting of BOS is conveyed on 01<sup>st</sup> August 19 for the preparation of syllabus of Certificate course entitled “C++ Programming Using Linux”. So, you are kindly requested to attend the meeting at 11:00 a.m. in IQAC Office of the college. Thanking you,

Yours Faithfully,

  
 (Dr. N.A. Kulkarni)  
 IQAC Director

  
 Mr. Dr. Santosh S. Hajare  
 Principal



Shri Swami Vivekanand Shiksha Sanstha, Kolhapur District,  
**PADMABHUSHAN DR. VASANTRAODADA PATIL MAHARVIDYALAYA**  
**TASGAON**, Dist. Sangli, Pin 410 312. **MR: 02346-250 685, 200575 FAX: 02346-250075**  
**(AFFILIATED TO SHIVAJI UNIVERSITY)**  
 E-mail : san.pdpm@rediffmail.com Website : pdpcollegeatggaon.com  
 Established Year - June 1982. P. No. 14 B. J. College No. 202-10-001 & Sr. College Code No. 20025 J. C-4

<b>Dr. Rajul Salunke</b> Vice-Chancellor	<b>Prof. Chandrakant Gopal Patil</b> President	<b>Prof. Bhayashree Sankar</b> Chairman	<b>Prof. Mrs. Shalburg M. Ganpat</b> Secretary	<b>Dr. K. R. Sankhar</b> Principal
---	---	--	---	---------------------------------------

Ref. No.: PDVPM/ \_\_\_\_\_ Date: \_\_\_\_\_

To,  
**Mr. ToshifMulla,**  
**Assistant Professor,**  
**Department of Computer Application,**  
**Adarsh College, Vite.**  
**Subject - Regarding Meeting of BOS for Syllabus Preparation.....**

**Respected Sir/Madam,**  
 With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled "C++ Programming Using Linux" to be conducted by The Department of Computer Application in our college during the academic year 2019-20.

The meeting of BOS is conveyed on 01<sup>st</sup> August 2019 for the preparation of syllabus of Certificate course entitled "C++ Programming Using Linux". So, you are kindly requested to attend the meeting at 11:00 a.m. in IQAC Office of the college. Thanking you,

Yours Faithfully,  
  
 (Dr. N. A. Kulkarni)  
 IQAC Director  
  
 Prof. Dr. Vinod K. Hajare  
 President  
 Maharashtra State Council of Educational Research and Training, Sangli





Sri Swami Vivekanand Shiksha Sanstha, Kolhapur Sanstha,

**PADMABHUSHAN DR. VASANTGADADA PATIL MAHAVIDYALAYA**

TASGAON, Dist. Sangli, Pin 416 312 W: STD : 02346-250 865, 250575 FAX : 02346-250575

(AFFILIATED TO SHIVAJI UNIVERSITY)

E-mail : san.pdvprts.tas@gmail.com Website : pdvpcollegetasgaon.com

NAAC Accredited 'B' Grade (2.78)

Established Year - June 1962 P. B. No. 14 J. College No. 222-10-001 Sr. College Code No. 19AC/1-10-8

Administrators

Dr. Bappy Baburao  
B.A. LL.B.  
President

Prof. Chaitrakant Gadbai Patil  
Ph.D.  
President

Prof. Anantkumar Kavathe  
M.A.  
Chairman

Prof. Mrs. Shuchang M. Sawale  
M.A., LL.B.  
Secretary

Dr. B. R. Kumbhar  
M.A., LL.B., Ph.D.  
Principal

Ref. No.: PDVPM17

Date :

To,  
**Mr. Sandeep Patil,**  
Assistant Professor,  
Department of Computer Application,  
A. C. S. College, Palus  
Subject: - Regarding Meeting of BOS for Syllabus Preparation.....

Respected Sir/Madam,

With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled "C++ Programming Using Linux" to be conducted by The Department of Computer Application in our college during the academic year 2019-20.

The meeting of BOS is conveyed on 01<sup>st</sup> August 2019 for the preparation of syllabus of Certificate course entitled "C++ Programming Using Linux". So, you are kindly requested to attend the meeting at 11.00 a.m. in IQAC Office of the college.

Thanking you,

Yours Faithfully,

(Dr. N. A. Kulkarni)  
IQAC Director

Prof. Dr. Vinod S. Hegde  
Principal  
Department of Computer Application  
Mahavidyalaya, Palus



Shri Swami Vivekanand Shikshan Sanshodha, Kolhapur Sanchhit,

**PADMA BHUSHAN DR. VASANTGADADA PATIL MAHAVIDYALAYA**

**TASGAON**, Dist. Sangli, Pin-416 312 ☎ STD : 02346-250 666, 250575 FAX : 02346-250875  
(AFFILIATED TO SHIVAJI UNIVERSITY)

E-mail : san.pdvpm.tas@gmail.com Website : pdvpcollegetasgaon.com

Established Year - June 1962 P.E. No. 14 J. College No. J22-10-001 Sr. College Code No. SHNDT J. C-6

BAAC Reccredited 'B' Grade (2.76)

Dr. Rajendra S. Patil

Founder

Mr. Chaitanya S. Patil

President

Mr. Anand S. Patil

Chairman

Mr. M. Shubham S. Patil

Secretary

Dr. S. S. Patil

Principal

Ref. No.: PDVPMT/

Date :

To,  
**Mr. A. A. Wagh,**  
Assistant Professor,  
Department of Computer Application,  
P. D. V. P. College, ~~Tasgaon~~

**Subject - Regarding Meeting of BOS for Syllabus Preparation.....**

Respected Sir/Madam,

With reference to the above mentioned subject, you are appointed as Member of Board of Studies (BOS) of Certificate Course entitled "C++ Programming Using Linux" to be conducted by The Department of Computer Application in our college during the academic year 2019-20.

The meeting of BOS is conveyed on 01<sup>st</sup> August 2019 for the preparation of syllabus of Certificate course entitled "C++ Programming Using Linux". So, you are kindly requested to attend the meeting at 11:00 a.m. in IQAC Office of the college.

Thanking you,

Yours Faithfully,

  
Dr. N.A. Kulkarni  
IQAC Director

  
Prof. Dr. Anand S. Patil  
Principal

“Dissemination of Education for Knowledge, Science and Culture”

-Shikshanmaharashi Dr. Bapuji Salunkhe

Shri Swami VivekanandShikshanSanstha, Kolhapur's

**Padmabhushan Dr.vasatraodada Patil Mahavidyalaya, Tasgaon**

**DEPARTMENT OF COMPUTER APPLICATION**

**A Certificate Course in C++ Programming using Linux**

## **Time Table**

**Academic year 2019-20**

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Time	Monday	Thursday	Wednesday	Thursday	Friday	Saturday
9 to 10 am	Theory	Theory	Theory	Theory	Theory	Theory
10 to11am	Practical	Practical	Practical	Practical	Practical	Practical

  
HOD  
Head,  
Department of Computer Science  
Shri Swami Vivekanand Patil  
Mahavidyalaya, Tasgaon (Sangli).

  
Prin. Dr. Milind S. Hujare  
Principal  
Padmabhushan Dr. Vasatraodada Patil  
Mahavidyalaya, Tasgaon (Sangli).

“Dissemination of Education for Knowledge, Science and Culture”

-Shikshanmaharashi Dr. Bapuji Salunkhe  
Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

**Padmabhushan Dr.vasatraodada Patil Mahavidyalaya, Tasgaon**

**DEPARTMENT OF COMPUTER APPLICATION  
A Certificate Course in C++ Programming using Linux  
Academic year 2019-20**

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## **NOTICE**

**8 AUGUST 2019**

All the students of **B.C.A. (Computer students)** are hereby informed that, our college is going to start a certificate course entitled “**C++ Programming using Linux**” for this current academic year .All the students should take admissions as earlier

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Shri Swami VivekanandShikshanSanstha, Kolhapur's  
PadmabhushanDr.vasandraodadaPatilMahavidyalaya, Tasgaon

Department of Computer Application

Paper No.1

C++ Programming usingLinux

Marks:50

## Syllabus

### Course Outcomes:

Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O and other standard language constructs.

### Students will be able

1. To understand how C++ improves C with object oriented features
2. To learn syntax and semantics of C++ programming language
3. To learn how to write inline functions for efficiency and performance.
4. To learn how to overload functions and operators in C++.
5. To learn how to design C++ classes for code reuse.
6. To learn how inheritance promote code reuse in C++.
7. To learn how inheritance and virtual functions implement dynamic binding with polymorphism.

### Unit – I: Introduction to C++ and Basics of Object oriented Programming

- 1) Some Concepts: Procedure Oriented programming versus Object oriented programming, Benefits of C++ over C Language
- 2) Object oriented programming Concepts: Object, class, Encapsulation, Abstraction, Polymorphism (static and dynamic), Inheritance
- 3) Basic C++ program: Header file, using namespace std, main(), input (>> extraction using cin) and output (<< insertion using cout) operator, Structure of C++ Program
- 4) C++ Tokens: Keywords (bool, class, delete, namespace, friend, operator keywords, and other C++ keywords), Introduction to Identifiers, constants, strings and operators as on C.
- 5) C++ Data Types: Built –in /Fundamental (void, char, int, float, double), User defined(struct, union, enum, class), derived(array, function, pointer, reference)
- 6) Symbolic Constants: const (simple, pointer)
- 7) Functions: Prototyping, Function Call(by value, by pointer, by reference), return by reference, default arguments, const arguments, inline function, constexpr function, function overloading(exact match, best match)

### Unit – II: Object oriented Programming

C++ Class: Difference between struct and class, class specification (class declaration with access modifiers/ visibility labels – private, public, protected members, member function definition inside as well as outside, object definition), Array (array as class member, array of objects), this pointer, static members (data members and member accessing function) and memory allocation of object,

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Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's  
**Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon**  
Department of Computer Application  
Paper No.1  
Evaluation System

**Nature of Theory Question Paper: (Maximum Marks 50)**

1. Choose correct alternatives. 10 Marks (Each 1 mark)
2. Attempt any two (out of three sub questions). 20 Marks (Each 10 marks)
3. Attempt any four out of six sub questions. 20 Marks (Each 5 marks)

**Reference Books**

1. Object Oriented Programming in C++ - Rajesh K. Shukla
2. Object Oriented Programming with C++ - Ponnam Poode
3. Object Oriented Programming with C++ - E. Balagurusamy
4. Mastering C++ - K.R. Venigopal
5. C++ Programming - D. Ravichandran
6. A Tour of C++ (2nd Edition) - Bjarne Stroustrup.
7. The C++ Programming Language (4th Edition) - Bjarne Stroustrup.



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Padmabhushan Dr.vasantaodada Patil Mahavidyalaya, Tasgaon

Department of Computer Application

**QUESTION PAPER**

**C++ programming using Linux**

Marks:50

Q 1) Choose Correct Alternative and rewrite it(one mark for each) [8 marks]

a) .....is involved whenever an object of its associated class is evaluated.

- i) constructor
- ii) Destructor
- iii) Inline function
- iv) friend Function

b) Default argument to the function are provided form.....

- i) left to right
- ii) Right to left
- iii) center
- iv) none of these

c) .....is the convert syntax for declaring static member.

- i) static member name data type.
- ii) Data type static member name
- iii) member name static data type
- iv) static data type member name

d) .....variable provides an alternative name for a previously declaring variable.

- i) constant
- ii) rename
- iii) Reference
- iv) none of these

e) Array of object are variable of type .....

- i) function
- ii) class
- iii) main
- iv) structure

f) In C++ .....operator is used to allocate memory dynamically

- i) callor
- ii) Malloc
- iii) nao
- iv)none of these

g) Function and operator overloading are type of polymorphism.

i)Run-time

ii)compile time

iii) Both i) &ii)

iv) none of these

Q 2) Attempt any two out of three questions(Each 10 marks)

[20 marks]

a) Explain overloading of any binary operator using friend function?

b) What is the use and pure virtual function? How to define it?

c) Explain type cast operator in c++ in detail?

Q 3) Attempt any four out of six questions?

a) Explain function prototyping with example?

b) Define multiple inheritance with its example?

c) How to use array as a class member ? Give its example?

d) What are different built in datatype used in C++?

e) Explain Array concept in C++?

f) Explain Object Oriented programming concept in C ?



## Assignment

[Name: \_\_\_\_\_]  
[Date: \_\_\_\_\_]

34) Select the correct alternative as per the

a) \_\_\_\_\_ is invoked whenever an object of its associated class is created.

- i) constructor
- ii) Destructor
- iii) Inline function
- iv) friend function.

→ constructor

b) Default arguments to the function are provided from

- i) left to right
- ii) Right to left
- iii) centre
- iv) none of these

→ (i) none of these

c) \_\_\_\_\_ is the correct syntax for declaring static data member.

- i) static member name data type.
- ii) data type static member name
- iii) Member name static data type
- iv) static data type member name.

→ static data type member name.

d) \_\_\_\_\_ variable provides an alternative name for a previously declared variable.

- i) synonym
- ii) constant.
- iii) Reference
- iv) none of these.

→ iii) Reference.

e) Array of objects are variables of type \_\_\_\_\_

- i) functions
- ii) class
- iii) main
- iv) structure.

→ ii) class

2) In C++ \_\_\_\_\_ operator is used to allocate memory dynamically.  
i) calloc ii) new  
iii) malloc iv) none of these.  
→ iii) malloc

3) function and operator overloading are type of polymorphism.  
i) Run-time ii) compile-time  
iii) Both i) & ii) iv) none of these.  
→ iii) Both i) & ii).

4) In oop the concept of \_\_\_\_\_ provides the idea of reusability.  
i) Abstraction ii) encapsulation  
iii) Inheritance iv) polymorphism  
→ iii) Inheritance

5) Default constructor has \_\_\_\_\_ arguments.  
i) one ii) no  
iii) two iv) three  
→ ii) no

6) overloading of unary operators are carried out using \_\_\_\_\_ function.  
i) member ii) friend  
iii) Both i) & ii) iv) none of these  
→ i) member

Q2 Retract any two of the following.

Q) Explain overloading of any binary operator using friend function.

Ans) In binary operator overloading function, there should not be one argument to be passed. It is overloading of an operator operating on two operands. In this approach, the operator overloading function must precede with friend keyword, and declare a function class scope. Keeping in mind, friend operator function takes two parameters in a binary operator, whereas one parameter in unary operator. All the working of implementation would remain as binary operator function except this function will be implemented outside of the class scope.

Example: ~

```
#include <iostream>
using namespace std;
class distance {
public:
```

```
    // Member object
```

```
    int feet, inch;
```

```
    // No parameter constructor
    distance()
```

```
{
```

```
    this->feet = 0;
```

```
    this->inch = 0;
```

```
}
```

```
    // constructor to initialize the object's value
```

```
    // parameterized constructor
```



distance (int feet, int inch)

{  
this->feet = f;  
this->inch = i;  
}

// Declaring friend function using  
friend keyword.

friend distance operator+ (Distance d1, Distance d2);

};

// Implementing friend function with two param<sup>meters</sup>  
distance operator+ (Distance d1, Distance d2) {

// call by reference

{

// create an object to return  
distance d3;

// perform addition of feet and inches

d3.feet = d1.feet + d2.feet;

d3.inch = d1.inch + d2.inch;

// return the resulting object

return d3;

}

// driver code

int main()

{

// declaring and initializing first object  
Distance d1 (8, 9);

// declaring and initializing second object  
Distance d2 (10, 2);

// Declaring third object

return d;

// use overloaded operator.

d3 = d1+d2;

// display the result

cout << "Total feet of inches: " << d3 << endl;

return 0;

}

Output:

Total Feet of Inches: 18"

Q) What is the use of pure virtual function?  
How to define it?

Ans) A pure virtual function or pure virtual method that is required to be implemented by a derived class if the derived class is not abstract. Classes containing pure virtual methods are termed "abstract" and they cannot be instantiated directly. A pure virtual function is a virtual function exists for which we need not to write any function definition. Only we have to declare it. It is declared by assigning 0 in declaration. An abstract class is a class exists which have at least one pure virtual function.

1) A class is abstract if it has at least one pure virtual function.

In the following eg, Test is an abstract class because it has a pure virtual function show().

(1) pure virtual functions make a class abstract.

```

#include <iostream>
using namespace std;
class Test
{
    int x;
public:
    virtual void show() = 0;
    int getx() { return x; }
};

int main(void)
{
    Test t;
    return 0;
}

```

output:

compile error: cannot declare variable 't' to be of abstract type 'Test' because the following virtual functions are pure within 'Test': virtual void Test::show()

e) we can have pointers and reference of abstract class type

eg.

```

#include <iostream>
using namespace std;
class Base
{
public:
    virtual void show() = 0;
};

class derived : public Base
{
}

```



```

public:
    void show () { cout << "In Derived In"; }
};
int main (void)
{
    Base *bp = new Derived ();
    bp -> show ();
    return 0;
}

```

Output: In Derived.

3) If we don't override the pure virtual function in derived class then derived class also becomes abstract class.

```

eg-
#include <iostream>
using namespace std;
class Base
{
public:
    virtual void show () = 0;
};
class derived : public Base {};
int main (void)
{
    derived d;
    return 0;
}

```

Compiler Error: cannot declare variable 'd' to be of abstract type 'derived' because the following virtual functions are pure virtual.

Q) Explain type cast operators in detail.  
Ans: A cast operator is a special operator that forces one data type to be converted into another. As an operator, a cast is binary and has the same precedence as any other unary operator. The most general cast supported by most of the C++ compilers is as follows:

(type) Expression  
Where type is the desired data type. There are other casting operators supported by C++ they are listed below

i) const-cast <type> (expr) - The const-cast operator is used to explicitly override const and/or volatile in a cast. The target type must be the same as the source type except for the alteration of its const or volatile attributes. This type of casting manipulates the most const attribute of the passed object, either to be set or removed.

ii) dynamic-cast <type> (expr) - The dynamic-cast performs a runtime cast that verifies the validity of the cast. If the cast cannot be made, the cast fails and the expression evaluates to null. A dynamic-cast performs casts on polymorphic types and can cast a A\* pointer into a B\* pointer only if the object being pointed to actually is a B object.

iii) reinterpret-cast <type> (expr) - The reinterpret-cast operator changes a pointer to any other type of pointer. It also allows casting from pointer to an integer type & vice versa.



- 10) `static_cast <type> (expr)` →  
The `static_cast` operator performs a nonpolymorphic cast. For example, it can be used to cast a base class pointer into a derived class pointer.

Q.3 Attempt any four of the following

- a) Explain function prototyping with example  
→ A function prototype is a declaration of the function that tells the program about the type of the values returned by the function and the number & type of arguments.

Function prototyping is one very useful feature of C++. A function prototype describes the function interface to the compiler by giving details such as the number & type of arguments & the type of return value.

The prototype declaration looks just like a function definition except that it has no body i.e., its code is missing. This is the time you know the stuff is a declaration & a definition.

A declaration introduces a (function) name to the program whereas a definition is a declaration that also tells the program what the function is doing & how it is doing it.

```
#include <iostream.h>
```

```
#include <conio.h>
```

```
#include <stdlib.h>
```

```
int odd (int, int);
```

```
// function prototype
```

```

int subtract(int, int); // def
int multiply(int, int); // def
int divide(int, int); // def
void main()
{
    clrscr();
    int a, b;
    cout << "Enter any two numbers: ";
    cin >> a >> b;
    cout << "Addition = " << add(a, b);
    cout << "Multiplication = " << multiply(a, b);
    cout << "Division = " << divide(a, b);
    getch();
}

int add(int x, int y) // fn def
{
    int res;
    res = x + y;
    return res;
}

int subtract(int x, int y) // fn def
{
    int res;
    res = x - y;
    return res;
}

int multiply(int x, int y) // fn def
{
    int res;
    res = x * y;
}

```

```

    return res;
}
int divide (int x, int y) // f" def"
{
    if (y == 0)
    {
        cout << "\n\n Divide by zero error :- !!";
        cout << "\n\n press any key to exit ...";
        getch();
        exit (1);
    }
    else
    {
        int res;
        res = x / y;
        return res;
    }
}

```

3  
 }  
 output :-) enter any two no: 10, 5  
 summation = 15  
 subtraction = 5  
 multiplication = 50  
 division = 2

ii) enter any two no: 10, 0  
 summation =  
 subtraction =  
 multiplication =  
 divide by zero error :- !!  
 press any key to exit ...



b) Define multiple inheritance. Give an example.  
 → Multiple inheritance is a feature of some object-oriented computer programming languages in which an object or class can inherit characteristics or features from more than one parent object or parent class. It is also multiple inheritance occurs when a class inherits from more than one base class.

```

example:
#include <iostream>
using namespace std;
class A {
public:
    int a = 5;
    A() {
        cout << "constructor for class A" << endl;
    }
}
class B {
public:
    int b = 10;
    B() {
        cout << "constructor for class B" << endl;
    }
}
class C: public A, public B {
public:
    int c = 20;
    C() {
        cout << "constructor for class C" << endl;
        cout << "class C inherits from class A and class B" << endl;
    }
}
  
```

```

    }
    }
    int main() {
        obj;
        cout << "a = " << obj.a << endl;
        cout << "b = " << obj.b << endl;
        cout << "c = " << obj.c << endl;
        return 0;
    }

```

c) How to use array as a class member?  
Give its example

→ Arrays can be declared as the member of a class. The arrays can be declared as private, public or protected members of the class.

example:

```

#include <iostream>
using namespace std;
const int size = 5;
class student {
    int roll no;
    int marks[size];
public:
    void getdata();
    void tot_marks();
};
void student::getdata() {
    cout << "Enter roll no. ";
    cin >> roll no;
}

```

```

for (int i=0, i<size; i++) {
    cout << "Enter marks in subject " << (i+1) << " : ";
    cin >> marks [i];
}

```

```

void student::tot_marks() { // calculating total marks }

```

```

int total = 0;
for (int i=0, i<size; i++)
    total += marks [i];
cout << "Total marks " << total;

```

```

int main() {
    student stu;
    stu.getdata();
    stu.tot_marks();
    return 0;
}

```

Output -

```

Enter roll no: 101
Enter marks in subject 1: 69
Enter marks in subject 2: 51
Enter marks in subject 3: 68
Enter marks in " " " " 4: 72
" " " " " 5: 72

```

In this eg; an array marks is declared as a private member of the class student for storing a student's marks in five subjects. The member function tot\_marks() calculates the total marks of all the subjects and display the value.



d) What are different built in datatypes used in C++?

Ans: Built in data types are following:

- i) int
  - ii) char
  - iii) float
  - iv) double
  - v) boolean
  - vi) void
  - vii) wide character
- i) int: for integers. Size 2 bytes  
eg: `int num = 100;`
  - ii) char: for characters. Size 1 byte  
eg: `char ch = 'A';`
  - iii) float: for single precision floating point. Size 4 bytes  
eg: `float num = 123.78987;`
  - iv) double: for double precision floating point. Size 8 bytes  
eg: `double num = 10098.78899;`
  - v) boolean: for booleans, true or false.  
eg: `bool b = true;`
  - vi) void: void is used as a return type.
  - vii) wchar\_t: Wide character. This should be avoided because its size is implementation defined & not reliable.

e) What are the characteristics of constructor function?

- Ans:
- i) They should be declared in the public section.
  - ii) They are invoked automatically when the objects are created.

are created.

- ① They do not have return (data type) type, not even void and therefore they cannot return any values.
- ② They can not be inherited (they are derived class) - can call the base class constructor.
- ③ They make implicit calls to the operator new and delete when memory allocation is required.
- ④ It is not possible to take the address of a constructor.
- ⑤ An object of a class with a constructor can not be a member of a union.

8) Explain different concepts in object oriented programming.

Ans. Some basic concepts of oop are.

- 1) class:- A class is a data type that has its own members i.e. data members & member functions. Data members are variables of the class. Member functions are the methods that are used to manipulate data members.

Syntax:-

```
class class_name {
```

```
    data_type data_name;
```

```
    return_type method_name (parameters);
```

- 2) objects - An object is an identifiable entity with some characteristics & behaviour.

Syntax:-

```
class_name object_name;
```



② Abstraction: Abstraction refers to the act of representing essential features without omitting including the background details. It is the concept of hiding data & showing only relevant data to the final user.

④ Data Encapsulation: Encapsulation, in oop, is the concept of wrapping together of data & information in a single unit & relative function that can manipulate the data.

⑤ Modularity: Modularity is the property of decomposing a system into a set of cohesive & loosely couple modules.

⑥ Inheritance: Inheritance is the capability of one class of things to derive capabilities or properties from another class.

- Types:
- i) Single inheritance
  - ii) Multiple "
  - iii) Multi-level "
  - iv) Hierarchical "
  - v) Hybrid "

⑦ Polymorphism: Polymorphism is the property by which the same message can be sent to objects of several diff. classes, and each object can respond to it in a different way depending upon its class. In C++, Polymorphism is implemented through overloading.

eg: float area (float a)  
{  
return a\*a;  
}

float area (float a, float b)

{  
return a \* b;

}

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-Shikshanmaharashi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

**Padmabhushan Dr.vasatraodada Patil Mahavidyalaya, Tasgaon**

**DEPARTMENT OF COMPUTER APPLICATION**  
**A Certificate Course in C++ Programming using Linux**  
**Academic year 2019-20**

Sr.no	Name Of The Student	Mark(50)
1	CHAVAN REKHA SUBHASH	35
2	CHAVAN RUPALI RAGHUNATH	45
3	DAGADE PANKAJ VISHNU	40
4	GAVANDI AKSHAYKUMAR LAXAMN	34
5	GAVANDI SAYALI TUKARAM	47
6	GHODAKE AKSHAY DADASO	30
7	KALBUGADE SONALI MANIK	25
8	NALAVADE SUJIT RAJARAM	29
9	PATIL HARISH RAMESH	27
10	PATIL HARSHAD LAXMAN	28
11	PATIL KALPAK DIPAK	28
12	PATIL RUTIK SABHAJI	25
13	PATLI SEEMA ANANDRAO	26
14	PAWAR RUTUJA VILAS	29
15	ROKADE AAKANKASHA BHIMRAO	25
16	SAYYAD SAHIL SHERAMAHMAD	25
17	SHENDAGE POOJA NANDKUMAR	25
18	SHINDE PRADNYA DILIPRAO	28
19	SJENDAGE NILESH LAXMAN	26
20	SUVASE PAVAN VIJAY	24
21	ZAMBRE SACHIN TANAJI	29
22	BHOSALE SURAJ SAMBHAJI	32
23	CHAVAN MAHESH MARUTI	35
24	GAVADE POOJA SAMBHAJI	34
25	KADAM PRAVIN SITARAM	35
26	KHARAT POOJA BABURAO	36
27	KHOT SAGAR NARAYAN	33
28	KORE PRATIK PRAKASH	32
29	LAD SHRADDJANJALI GANPATI	31
30	MALI GURUDAS RAMDAS	30
31	PATI MASHESH BHASKAR	26
32	PATIL YOGITA SANJAY	25
33	PAWAR KOMAL DINKAR	28
34	PUJARI SANDIP SAINATH	36
35	RAHIMATPURE MUSKAN JAFAR	37
36	SARAVADE VIDYA BALASO	33
37	JADHAV MAYURI NAMDEV	32
38	JADHAV NILESH BHAUSAHEB	33
39	JADHAV SANJANA JAGADISH	36
40	JADHAV SANKET RAMCHANDRA	39
41	JADHAV SOURABH MADHUKAR	34
42	JAGTAP PRAMOD SURESH	37
43	KADAM VISHAKHA ARJUN	35
44	KASHID ROHAN SURESH	35

45	LOKHANDE VINAYAK ASHOK	36
46	LUGADE PRIYANKA SUKHADEV	30
47	MAHADIK PRAVIN SURESH	33
48	MALI ANIKET BHARAT	32
49	MOHITE SNEHAL VINAYAK	36
50	MORE ASHWINI BHASKAR	33
51	MOTE SOURAV SURESH	30
52	MULLA SANIYA YASIN	30
53	NALAWADE KOMAL KIRAN	31
54	NALAWADE NISHIGANDHA JAGANNATH	36
55	NALAWADE PRATHMESH ARJUN	35
56	NALAWADE SHITAL AJIT	33
57	PATHAN SAHIL AHAMAD	36
58	PATIL AMIT ARUN	36
59	PATIL ANKITA SANJAY	35
60	PATIL PRATHMESH RAJENDRA	30
61	PATIL ROHIT DIPAK	35
62	PATIL ROHIT TANAJI	40
63	PATIL VIKAS TANAJI	35
64	PAWAR AAKASH MARUTI	30
65	POL SHUBHAM PRATAP	42
66	RAKSHE VARSHARANI SANTOSH	42
67	SHINDE OMKAR PRATAP	25
68	SUTAR RUTIKESH NARAYAN	26
69	YADAV SNEHAL SURESH	29
70	YADAV SWAPNALI VILAS	23
71	ZAMBRE LAKHAN SURESH	22
72	ZAMBRE RAJKUMAR DILIP	35
73	ZENDE ROHIT BHARAT	33
74	PATIL TEJAS ARUN	32
75	MANE VIVEK PRAKASH	31
76	PATIL RUSHIKESH TANAJI	32
77	SUTAR SWAPNIL NANDKUMAR	33
78	MANDALE ROHIT SANJAY	25
79	NALAWADE GURUPRASAD RAJARAM	30
80	ZAMBRE AKASH UTTAM	31
81	ZAMBRE PRATIK PRATAP	32
82	KOLI AKASH SHIVAJI	33

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 Padmabhushan Dr. Vasantroddada Patil Mahavidyalaya, Tasegaon Department of Computer Application

Attendance Sheet For Academic Year 2019-2020 (BCA, I, II, III)

A Certificate Course In C++ Programming using Linux

Sr. No	Name Of The Student	Date																																					
		08/08	09/08	10/08	11/08	12/08	13/08	14/08	15/08	16/08	17/08	18/08	19/08	20/08	21/08	22/08	23/08	24/08	25/08	26/08	27/08	28/08	29/08	30/08	31/08	01/09	02/09	03/09	04/09	05/09	06/09	07/09	08/09	09/09	10/09	11/09			
1	CHAVAN DEEPA SHIBASHI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
2	CHAVAN SURALI RISHABHATI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
3	DAGAD PANKAJ YEGODI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
4	DATTAJI ACHUTEJIJI LAXMI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
5	DAYANIDHARI TEJAS AN	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6	DEWANI ACHARY DILKASHI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
7	KALWANE SORALI SHEFI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
8	KALWANE SHRI SUDHAN	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
9	PATE DURGAMANI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
10	PATE HARSHAD LAXMI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
11	PATE RAJPAK DEVA	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
12	PATE RUTHI SANGHAI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13	PATE SHRI MANORAJ	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14	PAWAR RUTIKA VELAI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
15	REKAR ANKANE SHI SHEKARI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
16	SAFYATU SUDHAKAR	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
17	SHENAI NEHA SHEKHAR	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
18	SARDESHI SHEKARI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
19	SHENAI NEHA SHEKHAR	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
20	SHENAI NEHA SHEKHAR	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
21	TARDE SACHIN TANAJI	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A





52	MELAKSANYAKAN	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
53	MEMERIKAKAN	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
54	MELAKSANYAKAN	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610
55	MELAKSANYAKAN	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
56	MELAKSANYAKAN	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670
57	MELAKSANYAKAN	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
58	MELAKSANYAKAN	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
59	MELAKSANYAKAN	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770
60	MELAKSANYAKAN	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
61	MELAKSANYAKAN	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
62	MELAKSANYAKAN	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870
63	MELAKSANYAKAN	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
64	MELAKSANYAKAN	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
65	MELAKSANYAKAN	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970
66	MELAKSANYAKAN	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
67	MELAKSANYAKAN	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040
68	MELAKSANYAKAN	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070
69	MELAKSANYAKAN	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
70	MELAKSANYAKAN	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140
71	MELAKSANYAKAN	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170
72	MELAKSANYAKAN	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
73	MELAKSANYAKAN	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240
74	MELAKSANYAKAN	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270
75	MELAKSANYAKAN	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300
76	MELAKSANYAKAN	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340
77	MELAKSANYAKAN	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370
78	MELAKSANYAKAN	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400
79	MELAKSANYAKAN	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440
80	MELAKSANYAKAN	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470
81	MELAKSANYAKAN	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500
82	MELAKSANYAKAN	1510	1511	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522	1523	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539	1540



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