1.

| AD |
| --- |
| -f: double |
| -df : Vector |
| -id : int |
| +AD() |
| +AD(double, int , int) |
| +AD(double, int) |
| +change_value_of_ind_var(double): void |
| +getf(): double |
| +getDF(int): double |
| +getGradient: vector |
| +getJacobian():Matrix |
| +operator+(AD):AD |
| +operator-(AD):AD |
| +operator*(AD):AD |
| +operator/(AD):AD |
| +operator^(AD):AD |
| +operator+(double,AD): AD |
| +operator-(double,AD): AD |
| +operator*(double,AD): AD |
| +operator/(double,AD): AD |
| +operator^(double,AD): AD |
| +operator+(double):AD |
| +operator-(double):AD |
| +operator*(double):AD |
| +operator/(double):AD |

| +operator^(double):AD |
| --- |
| +sin(AD):AD |
| +cos(AD):AD |
| +tan(AD):AD |
| +cosec(AD):AD |
| +cot(AD):AD |
| +arcsin(AD):AD |
| +arccos(AD):AD |
| +arctan(AD):AD |
| +sinh(AD):AD |
| +cosh(AD):AD |
| +tanh(AD):AD |
| +log(AD):AD |
| +exp(AD):AD |
| +abs(AD):AD |
| +sec(AD):AD |

2.

| Matrix |
| --- |
| +M: double |
| +num_rows:int |
| +num_cols:int |
| +Matrix() |
| +Matrix(int, int) |
| +input(): void |
| +display(): void |
| +setElement(int, int, double): void |

| getElement(int,int):double |
| --- |
| +operator+(Matrix):Matrix |
| +operator-(Matrix):Matrix |
| +operator*(Matrix):Matrix |
| +operator+(double):Matrix |
| +operator-(double):Matrix |
| +operator*(double):Matrix |
| +operator/(double):Matrix |
| +Transpose(Matrix):Matrix |
| +operator+(double, Matrix): Matrix |
| +operator-(double, Matrix): Matrix |
| +operator*(double, Matrix): Matrix |
| +operator<<(ostream,Matrix):ostream |
| +operator>>(istream,Matrix):istream |
| |
| |

3.

| Vector |
| --- |
| +A: double |
| +size: int |
| +Vector() |
| +Vector(int) |
| |

4.

| Stacked |
| --- |
| -elements:<M> |
| -size:int |
| +stacked() |
| +isEmpty(): bool |
| +getTopElement(): <M> |
| +push(<M>): void |
| +pop(): <M> |
| +getSize(): int |

5.

| DP |
| --- |
| +i: int |
| +j: int |
| +x_coord: double |
| +y_coord: double |
| +ad_object: AD |
| +DP() |
| +DP(int, int, double, double) |

6.

| Discrete |
| --- |
| +m: int |
| +n: int |
| +a,b,c,d,:double |
| +del_X, del_Y:double |
| +Points : Vector<DP> |

| +BP_a: Vector<DP> |
| --- |
| +BP_b: Vector<DP> |
| +BP_c: Vector<DP> |
| +BP_d: Vector<DP> |
| +Discrete(double, double, double, double, int , int) |
| + get_point(int, int): DP |
| +setVal(vector):void |

7.

| charList |
| --- |
| -elements: string |
| +charList() |
| +charList(int) |
| +inf_to_post(string):charList |
| +eval(double, double, int, AD) : AD |
| +display(): void |
| +addElement(string): void |
| +setElement(int): void |
| +getElement(int): string |
| +operatorPriority(char): int |

8.

| PostfixAll |
| --- |
| +A_postfix: charList |
| +B_postfix: charList |
| +C_postfix: charList |
| +D_postfix: charList |
| +E_postfix: charList |

| |
|---|
| +f1_postfix: charList |
| +g1_postfix: charList |
| +f2_postfix: charList |
| +g2_postfix: charList |
| +PostfixAll(string, string, string, string, string, string, string, string, string) |