

Information Retrieval

Home Work #3

“Statistical Retrieval System”

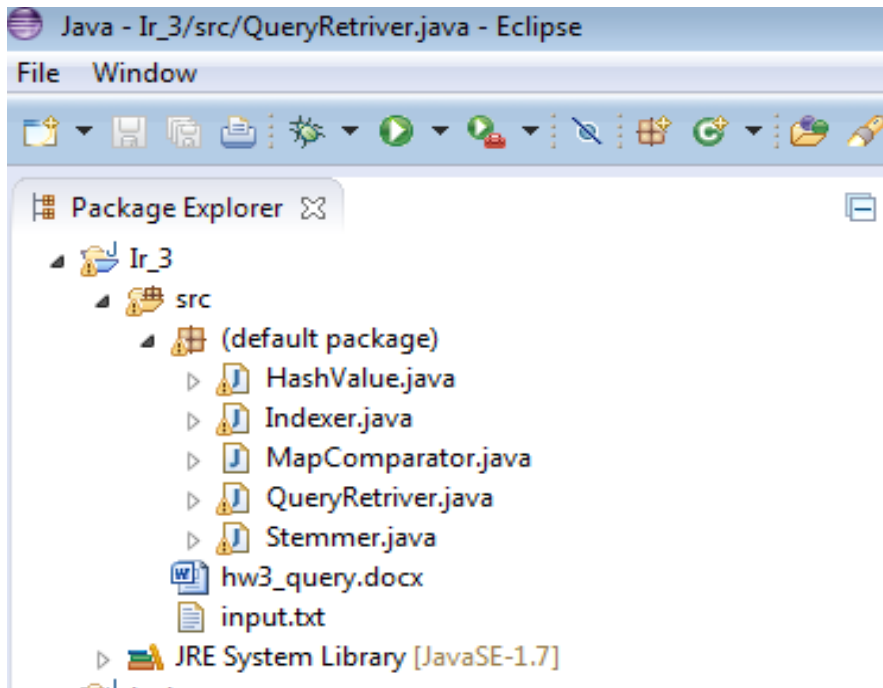
By,

Rohit hedge

2021134344

Project Description,

This Project contains following Classes,



Working,

- Query Retriever is the main class which starts the execution.
- Indexer is the class responsible for indexing the Documents and storing in the map. (Same Class developed in previous home work).
- Stemmer is the class to stem the words.
- Locations of the Cranfield data set is stored in the input.txt

Running the code:

Java *.java

Java QueryRetriver

Query and Results:

- Query 1:
what similarity laws must be obeyed when constructing aeroelastic models
of heated high speed aircraft

Query After Indexing --> law, model, aeroelast, what, obei, when, construct, must,
be, similar,

Top 10 docs for the query under Weight-1 --> 573, 486, 184, 329, 1072, 51, 1361, 219,
14, 1268,

Rank # --> 1 Doc-ID #573

Score --> 1.0238174065445942

Document Title -->

viscous hypersonic similitude .

Rank # --> 2 Doc-ID #486

Score --> 0.9876209707921972

Document Title -->

similarity laws for aerothermoelastic testing .

Rank # --> 3 Doc-ID #184

Score --> 0.9617540207313489

Document Title -->

scale models for thermo-aeroelastic research .

Rank # --> 4 Doc-ID #329

Score --> 0.8523448258306147

Document Title -->

various aerodynamic characteristics in hypersonic rarefiedgas flow .

Rank # --> 5 Doc-ID #1072

Score --> 0.8092423829966091

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank # --> 6 Doc-ID #51

Score --> 0.7726706633480277

Document Title -->

theory of aircraft structural models subjected to aerodynamicheating and external
loads .

Rank # --> 7 Doc-ID #1361

Score --> 0.6996230321822683

Document Title -->

large deflections of structures subjected to heatingand external loads .

Rank # --> 8 Doc-ID #219

Score --> 0.6710468962812299

Document Title -->

on the strength distribution of noise sources alonga jet .

Rank # --> 9 Doc-ID #14

Score --> 0.6662218100979322

Document Title -->

piston theory - a new aerodynamic tool for the aeroelastician.

Rank # --> 10 Doc-ID #1268

Score --> 0.6513116785674673

Document Title -->

stable combustion of a high-velocity gas in a heated boundary layer .

Top 10 docs for the query under Weight-2 --> 573, 184, 486, 51, 1072, 329, 576, 1361, 665, 1003,

Rank# --> 1 Doc-ID #573

Score --> 2.8225501715341945

Document Title -->

viscous hypersonic similitude .

Rank# --> 2 Doc-ID #184

Score --> 2.6808849365513607

Document Title -->

scale models for thermo-aeroelastic research .

Rank# --> 3 Doc-ID #486

Score --> 2.5182784711493884

Document Title -->

similarity laws for aerothermoelastic testing .

Rank# --> 4 Doc-ID #51

Score --> 2.413338925828341

Document Title -->

theory of aircraft structural models subjected to aerodynamic heating and external loads .

Rank# --> 5 Doc-ID #1072

Score --> 2.267890173280604

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank# --> 6 Doc-ID #329

Score --> 2.225665239777313

Document Title -->

various aerodynamic characteristics in hypersonic rarefied gas flow .

Rank# --> 7 Doc-ID #576

Score --> 2.1921971772134636

Document Title -->

viscous and inviscid stagnation flow in a dissociated hypervelocity free stream .

Rank# --> 8 Doc-ID #1361

Score --> 2.1618995187628616

Document Title -->

large deflections of structures subjected to heating and external loads .

Rank# --> 9 Doc-ID #665

Score --> 2.133516566874235

Document Title -->

on the theory of hypersonic gas flow with a power law shock wave .

Rank# --> 10 Doc-ID #1003

Score --> 2.064764631928321

Document Title -->

free-flight measurements of the static and dynamic

Query 2:

Enter the input query:

what are the structural and aeroelastic problems associated with flight of high speed aircraft

Query After Indexing --> flight, with, aeroelast, structur, what, associ, ar, problem, the, and,

Top 10 docs for the query under Weight-1 --> 746, 1361, 875, 284, 486, 184, 792, 1331, 810, 12,

Rank # --> 1 Doc-ID #746

Score --> 0.709060418123119

Document Title -->

aeroelastic problems in connection with high speedflight .

Rank # --> 2 Doc-ID #1361

Score --> 0.6686489043941377

Document Title -->

large deflections of structures subjected to heatingand external loads .

Rank # --> 3 Doc-ID #875

Score --> 0.5926638002227693

Document Title -->

models for aeroelastic investigation .

Rank # --> 4 Doc-ID #284

Score --> 0.5825478975854457

Document Title -->

the divergence of supersonic wings including chordwisebending .

Rank # --> 5 Doc-ID #486

Score --> 0.5814752055398094

Document Title -->

similarity laws for aerothermoelastic testing .

Rank # --> 6 Doc-ID #184

Score --> 0.5814314122383737

Document Title -->

scale models for thermo-aeroelastic research .

Rank # --> 7 Doc-ID #792

Score --> 0.5471071128771378

Document Title -->

some low speed problems of high speed aircraft .

Rank # --> 8 Doc-ID #1331

Score --> 0.5459322007719755

Document Title -->

calculated responses of a large sweptwing airplaneto continuous turbulence with flight-test comparisons .

Rank # --> 9 Doc-ID #810

Score --> 0.5405714838783828

Document Title -->

the shock wave noise problem of supersonic aircraftin steady flight .

Rank # --> 10 Doc-ID #12

Score --> 0.5399162937654063

Document Title -->

some structural and aerelastic considerations of highspeed flight .

Top 10 docs for the query under Weight-2 --> 746, 1089, 810, 486, 395, 1263, 1309, 997, 172, 1380,

Rank# --> 1 Doc-ID #746

Score --> 3.3375794859428467

Document Title -->

aeroelastic problems in connection with high speedflight .

Rank# --> 2 Doc-ID #1089

Score --> 3.1815770441013704

Document Title -->

aerodynamic characteristics of propeller-driven vtolaircraft .

Rank# --> 3 Doc-ID #810

Score --> 3.0817331995192854

Document Title -->

the shock wave noise problem of supersonic aircraftin steady flight .

Rank# --> 4 Doc-ID #486

Score --> 3.0596297426903156

Document Title -->

similarity laws for aerothermoelastic testing .

Rank# --> 5 Doc-ID #395

Score --> 3.0484443084848407

Document Title -->

new methods in heat flow analysis with applicationto flight structures .

Rank# --> 6 Doc-ID #1263

Score --> 3.036227089393309

Document Title -->

turbulent heat transfer through a highly cooled, partiallydissociated boundary layer .

Rank# --> 7 Doc-ID #1309

Score --> 3.031022622337784

Document Title -->

hypersonic flows past a yawed circular cone and otherpointed bodies .

Rank# --> 8 Doc-ID #997

Score --> 3.0209957699258454

Document Title -->

experimental and theoretical studies of axisymmetric free jets .

Rank# --> 9 Doc-ID #172

Score --> 3.0137523678128555

Document Title -->

some aerodynamic considerations of nozzle afterbodycombination .

Rank# --> 10 Doc-ID #1380

Score --> 2.9917934238584394

Document Title -->

the problem of obtaining high lift-drag ratios at supersonic speeds .

- Query 3:

Enter the input query:

what problems of heat conduction in composite slabs have been solved so far

Query After Indexing --> of, conduct, composit, what, have, so, slab, problem, heat, in, been, solv,

Top 10 docs for the query under Weight-1 --> 485, 144, 1072, 91, 90, 399, 579, 181, 344, 826,

Rank # --> 1 Doc-ID #485

Score --> 1.290553249243307

Document Title -->

linear heat flow in a composite slab .

Rank # --> 2 Doc-ID #144

Score --> 1.1702845942458813

Document Title -->

heat flow in composite slabs .

Rank # --> 3 Doc-ID #1072

Score --> 1.16493491190634

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank # --> 4 Doc-ID #91

Score --> 1.046298902694325

Document Title -->

periodic temperature distribution in a two-layer composite slab .

Rank # --> 5 Doc-ID #90

Score --> 1.0084470545269988

Document Title -->

periodic temperature distributions in a two-layer compositeslab .

Rank # --> 6 Doc-ID #399

Score --> 0.997300123592355

Document Title -->

conduction of heat in composite slabs .

Rank # --> 7 Doc-ID #579

Score --> 0.868254149312089

Document Title -->

further developments of new methods in heat flow analysis .

Rank # --> 8 Doc-ID #181

Score --> 0.8587902387344767

Document Title -->

some problems on heat conduction in stratiform bodies .

Rank # --> 9 Doc-ID #344

Score --> 0.8331416309123224

Document Title -->

some experimental techniques in mass transfer cooling .

Rank # --> 10 Doc-ID #826

Score --> 0.7862782574031028

Document Title -->

small bending and stretching of sandwich type shells .

Top 10 docs for the query under Weight-2 --> 1072, 344, 329, 144, 485, 91, 980, 828, 826, 399,

Rank# --> 1 Doc-ID #1072

Score --> 3.623172908139293

Document Title -->
ignition and combustion in a laminar mixing zone .
Rank# --> 2 Doc-ID #344
Score --> 3.4848533528179155
Document Title -->
some experimental techniques in mass transfer cooling .
Rank# --> 3 Doc-ID #329
Score --> 3.4720951808295566
Document Title -->
various aerodynamic characteristics in hypersonic rarefiedgas flow .

Rank# --> 4 Doc-ID #144
Score --> 3.22668037014791
Document Title -->
heat flow in composite slabs .
Rank# --> 5 Doc-ID #485
Score --> 3.192935696626685
Document Title -->
linear heat flow in a composite slab .
Rank# --> 6 Doc-ID #91
Score --> 3.173774662449697
Document Title -->
periodic temperature distribution in a two-layer composite slab .
Rank# --> 7 Doc-ID #980
Score --> 3.1736124258852785
Document Title -->
a method of computing the transient temperature of thick walls fromarbitrary
variation of adiabatic-wall temperature and heat-transfer coefficient

Rank# --> 8 Doc-ID #828
Score --> 3.1651380584721704
Document Title -->
stresses and small displacements of shallow sphericalshells .

Rank# --> 9 Doc-ID #826
Score --> 3.1033560775110796
Document Title -->
small bending and stretching of sandwich type shells .
Rank# --> 10 Doc-ID #399
Score --> 3.1017866146213513
Document Title -->
conduction of heat in composite slabs .

- Query 4:

Enter the input query:

can a criterion be developed to show empirically the validity of flow solutions for chemically reacting gas mixtures based on the simplifying assumption of instantaneous local chemical equilibrium

Query After Indexing --> to, valid, of, empir, criterion, can, a, show, the, flow, develop, be,

Top 10 docs for the query under Weight-1 --> 417, 58, 211, 1242, 1085, 556, 38, 1183, 1035, 819,

Rank # --> 1 Doc-ID #417

Score --> 0.6442499358418199

Document Title -->

on the stability of two dimensional parallel flows .

Rank # --> 2 Doc-ID #58

Score --> 0.5884631983952519

Document Title -->

pressure measurements on sharp and blunt 5 and 15 half-anglecones at mach number 3.86 and angles of attack to

Rank # --> 3 Doc-ID #211

Score --> 0.5362311873405972

Document Title -->

effect of slight blunting of leading edge of an immersedbody on the flow around it at hypersonic speed .

Rank # --> 4 Doc-ID #1242

Score --> 0.5252195432762844

Document Title -->

some considerations on the laminar stability of time-dependent basicflows .

Rank # --> 5 Doc-ID #1085

Score --> 0.49863516845721234

Document Title -->

note on the convergence of numerical solutions of the navier-stokesequations .

Rank # --> 6 Doc-ID #556

Score --> 0.48753649611338573

Document Title -->

numerical comparison between exact and approximatetheories of hypersonic inviscid flow past slender blunt

Rank # --> 7 Doc-ID #38

Score --> 0.4830293531332084

Document Title -->

on the prediction of mixed subsonic/supersonic pressuredistributions .

Rank # --> 8 Doc-ID #1183

Score --> 0.48023616849489204

Document Title -->

laminar hypersonic trail in the expansion-conductionregion .

Rank # --> 9 Doc-ID #1035

Score --> 0.4760091379963927

Document Title -->

note on creep buckling of columns .

Rank # --> 10 Doc-ID #819

Score --> 0.46991175640754074

Document Title -->

stresses in the plastic range around a normally loaded circular hole in an infinite sheet .

Top 10 docs for the query under Weight-2 --> 58, 417, 35, 587, 211, 1104, 917, 916, 556, 820,

Rank# --> 1 Doc-ID #58

Score --> 4.2402697187397225

Document Title -->

pressure measurements on sharp and blunt 5 and 15 half-angle cones at mach number 3.86 and angles of attack to

Rank# --> 2 Doc-ID #417

Score --> 4.2399289185178475

Document Title -->

on the stability of two dimensional parallel flows .

Rank# --> 3 Doc-ID #35

Score --> 3.9494057452005444

Document Title -->

stagnation point of a blunt body in hypersonic flow .

Rank# --> 4 Doc-ID #587

Score --> 3.9308269672206158

Document Title -->

variational analysis of ablation .

Rank# --> 5 Doc-ID #211

Score --> 3.8533160414834966

Document Title -->

effect of slight blunting of leading edge of an immersed body on the flow around it at hypersonic speed .

Rank# --> 6 Doc-ID #1104

Score --> 3.8100267009660826

Document Title -->

aerodynamic heating of blunt nose shapes at mach numbers up to 14 .

Rank# --> 7 Doc-ID #917

Score --> 3.806766854512885

Document Title -->

a method of calculating the short period longitudinal stability derivatives of a wing in linearised unsteady

Rank# --> 8 Doc-ID #916

Score --> 3.803686559880592

Document Title -->

the flow around oscillating low aspect ratio wings at transonic speeds .

Rank# --> 9 Doc-ID #556

Score --> 3.795836053204852

Document Title -->

numerical comparison between exact and approximate theories of hypersonic inviscid flow past slender blunt

Rank# --> 10 Doc-ID #820

Score --> 3.7876303163777427
Document Title -->
theories of plastic buckling .

- **Query 5:**

Enter the input query:

what chemical kinetic system is applicable to hypersonic aerodynamic problems

Query After Indexing --> hyperson, to, system, is, chemic, kinet, what, aerodynam, applic,

Top 10 docs for the query under Weight-1 --> 401, 103, 1072, 625, 1296, 943, 968, 552, 163, 1032,

Rank # --> 1 Doc-ID #401

Score --> 0.880220237999032

Document Title -->

inviscid hypersonic airflows with coupled non-equilibrium processes .

Rank # --> 2 Doc-ID #103

Score --> 0.8550857691625249

Document Title -->

theory of mixing and chemical reaction in the opposed jet diffusion flame .

Rank # --> 3 Doc-ID #1072

Score --> 0.8307900925463099

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank # --> 4 Doc-ID #625

Score --> 0.7999299373617683

Document Title -->

viscous and inviscid nonequilibrium gas flows .

Rank # --> 5 Doc-ID #1296

Score --> 0.7626269383990576

Document Title -->

non-equilibrium expansions of air with coupled chemical reactions .

Rank # --> 6 Doc-ID #943

Score --> 0.7440059801678756

Document Title -->

compressible free shear layer with finite initial thickness .

Rank # --> 7 Doc-ID #968

Score --> 0.7427353355340044

Document Title -->

rocket propulsion systems for interplanetary flight .

Rank # --> 8 Doc-ID #552

Score --> 0.7412276954810055

Document Title -->

chemical kinetics of high temperature air .

Rank # --> 9 Doc-ID #163

Score --> 0.7224260139997511

Document Title -->

an analysis of the corridor and guidance requirements for supercircular entry planetary atmospheres .

Rank # --> 10 Doc-ID #1032

Score --> 0.691904704693008

Document Title -->

on the conservativeness of various distributed force systems .

Top 10 docs for the query under Weight-2 --> 401, 625, 103, 163, 943, 28, 36, 355, 488, 1374,

Rank# --> 1 Doc-ID #401

Score --> 2.866738622887677

Document Title -->

inviscid hypersonic airflows with coupled non-equilibrium processes .

Rank# --> 2 Doc-ID #625

Score --> 2.7663497494445655

Document Title -->

viscous and inviscid nonequilibrium gas flows .

Rank# --> 3 Doc-ID #103

Score --> 2.672213704953

Document Title -->

theory of mixing and chemical reaction in the opposed jet diffusion flame .

Rank# --> 4 Doc-ID #163

Score --> 2.6354036246218917

Document Title -->

an analysis of the corridor and guidance requirements for supercircular entry planetary atmospheres .

Rank# --> 5 Doc-ID #943

Score --> 2.6109337710849467

Document Title -->

compressible free shear layer with finite initial thickness .

Rank# --> 6 Doc-ID #28

Score --> 2.483308809340698

Document Title -->

a note on the explosion solution of sedov with application to the newtonian theory of unsteady hypersonic flow .

Rank# --> 7 Doc-ID #36

Score --> 2.4688566056822703

Document Title -->

supersonic flow around blunt bodies .

Rank# --> 8 Doc-ID #355

Score --> 2.464224974011397

Document Title -->

the injection of air into the dissociated hypersonic laminar boundary layer .

Rank# --> 9 Doc-ID #488

Score --> 2.4493298239000674

Document Title -->

a reaction-rate parameter for gasdynamics of a chemically reacting gas mixture .

Rank# --> 10 Doc-ID #1374

Score --> 2.4493298239000674

Document Title -->

theoretical analysis of turbulent mixing of reactive gases with application to supersonic combustion of

- Query 6:

Enter the input query:

what theoretical and experimental guides do we have as to turbulent
couette flow behaviour

Query After Indexing --> guid, to, what, have, experiment, as, do, theoreti, turbul,
and, we,

Top 10 docs for the query under Weight-1 --> 798, 296, 344, 262, 315, 1075, 160, 72,
329, 121,

Rank # --> 1 Doc-ID #798

Score --> 0.8703676247399952

Document Title -->

interaction between shock waves and boundary layers, with a note on the effects of the
interaction of the performance of supersonic intakes .

Rank # --> 2 Doc-ID #296

Score --> 0.7209771553319986

Document Title -->

notes on waves through gases at pressures small compared with the magnetic pressure,
with applications to upper

Rank # --> 3 Doc-ID #344

Score --> 0.7132470084630885

Document Title -->

some experimental techniques in mass transfer cooling .

Rank # --> 4 Doc-ID #262

Score --> 0.6957434654209244

Document Title -->

the formation of a blast wave by a very intense explosion .

Rank # --> 5 Doc-ID #315

Score --> 0.689152055131022

Document Title -->

scale effects at high subsonic and transonic speeds and methods for fixing transition
in model experiments .

Rank # --> 6 Doc-ID #1075

Score --> 0.6677339172847003

Document Title -->

an experimental and theoretical investigation of second-order supersonic wing-body
interference, for a non-lifting body with wings at incidence

Rank # --> 7 Doc-ID #160

Score --> 0.6633924347172488

Document Title -->

approximate analytical solutions for hypersonic flow past slender power-law bodies .

Rank # --> 8 Doc-ID #72

Score --> 0.6266982017727087

Document Title -->

boundary layer behind shock or thin expansion wave moving into stationary fluid .

Rank # --> 9 Doc-ID #329

Score --> 0.6172145735077006

Document Title -->

various aerodynamic characteristics in hypersonic rarefiedgas flow .

Rank # --> 10 Doc-ID #121

Score --> 0.6165661726934446

Document Title -->

a theory for base pressures in transonic and supersonicflow .

Top 10 docs for the query under Weight-2 --> 99, 1075, 344, 798, 131, 1372, 329, 121, 251, 345,

Rank# --> 1 Doc-ID #99

Score --> 3.1256399189591697

Document Title -->

the fundamentals of the statistical theory of turbulence .

Rank# --> 2 Doc-ID #1075

Score --> 3.1027392344703557

Document Title -->

an experimental and theoretical investigation of second-order supersonic wing-body interference, for a non-lifting body with wings at incidence

Rank# --> 3 Doc-ID #344

Score --> 3.0749025979314273

Document Title -->

some experimental techniques in mass transfer cooling .

Rank# --> 4 Doc-ID #798

Score --> 3.073576002636972

Document Title -->

interaction between shock waves and boundary layers, with a note on theeffects of the interaction of the performance of supersonic intakes .

Rank# --> 5 Doc-ID #131

Score --> 3.0192766350030262

Document Title -->

two-dimensional jet mixing of a compressible fluid .

Rank# --> 6 Doc-ID #1372

Score --> 3.013034281560761

Document Title -->

on axially symmetric, turbulent, compressible mixing in the presenceof initial boundary layer .

Rank# --> 7 Doc-ID #329

Score --> 2.9662444563238557

Document Title -->

various aerodynamic characteristics in hypersonic rarefiedgas flow .

Rank# --> 8 Doc-ID #121

Score --> 2.9139045685885434

Document Title -->

a theory for base pressures in transonic and supersonicflow .

Rank# --> 9 Doc-ID #251

Score --> 2.8827332779838843

Document Title -->

a collection of longitudinal stability derivativesof wings at supersonic speeds .

Rank# --> 10 Doc-ID #345

Score --> 2.8570767685218237

Document Title -->

the interaction of shock waves with boundary layer on a flat surface .

•

Query 7:

Enter the input query:

is it possible to relate the available pressure distributions for an
ogive forebody at zero angle of attack to the lower surface pressures of
an equivalent ogive forebody at angle of attack

Query After Indexing --> to, is, pressur, it, for, an, distribut, relat, possibl,
avail, the,

Top 10 docs for the query under Weight-1 --> 1336, 262, 1382, 907, 1104, 1195, 433,
96, 185, 205,

Rank # --> 1 Doc-ID #1336

Score --> 0.6152791669993184

Document Title -->

studies of the use of freon-12 as a wind tunnel testing medium .

Rank # --> 2 Doc-ID #262

Score --> 0.598804146610157

Document Title -->

the formation of a blast wave by a very intense explosion .

Rank # --> 3 Doc-ID #1382

Score --> 0.5368106237401069

Document Title -->

the solution of the equations of the laminar boundary layer for schubauer's observed
pressure distribution

Rank # --> 4 Doc-ID #907

Score --> 0.5082774435963341

Document Title -->

cavitation and pressure distribution head forms at zero angle of yaw .

Rank # --> 5 Doc-ID #1104

Score --> 0.49185689225050244

Document Title -->

aerodynamic heating of blunt nose shapes at mach numbers up to 14 .

Rank # --> 6 Doc-ID #1195

Score --> 0.4793226580779255

Document Title -->

experiments with two-dimensional, transversely impinging

Rank # --> 7 Doc-ID #433

Score --> 0.4749675211305231

Document Title -->

application of two dimensional vortex theory to the prediction of flow fields behind
wings of wing-body

Rank # --> 8 Doc-ID #96

Score --> 0.4748523716840687

Document Title -->

review of published data on the effect of roughness on transition from laminar to
turbulent flow .

Rank # --> 9 Doc-ID #185

Score --> 0.4745652403942451

Document Title -->

some possibilities of using gas mixtures other than in aerodynamic research .

Rank # --> 10 Doc-ID #205

Score --> 0.4522883210456642

Document Title -->

a correlation of airfoil section data with the aerodynamic loads measured on a 45 sweptback wing at subsonic mach

Top 10 docs for the query under Weight-2 --> 1382, 1195, 262, 38, 637, 680, 498, 379, 1155, 1336,

Rank# --> 1 Doc-ID #1382

Score --> 4.283263941303973

Document Title -->

the solution of the equations of the laminar boundary layer for schubauer's observed pressure distribution

Rank# --> 2 Doc-ID #1195

Score --> 4.221365151324264

Document Title -->

experiments with two-dimensional, transversely impinging

Rank# --> 3 Doc-ID #262

Score --> 4.203057511842526

Document Title -->

the formation of a blast wave by a very intense explosion .

Rank# --> 4 Doc-ID #38

Score --> 3.916261419165924

Document Title -->

on the prediction of mixed subsonic/supersonic pressure distributions .

Rank# --> 5 Doc-ID #637

Score --> 3.9025817742269333

Document Title -->

an integral equation relating the general time-dependent lift and downwash distributions on finite wings in subsonic flow .

Rank# --> 6 Doc-ID #680

Score --> 3.8867973151234705

Document Title -->

generalized conical flow fields in supersonic wing theory .

Rank# --> 7 Doc-ID #498

Score --> 3.8859718332107334

Document Title -->

calculation of potential flow about bodies of revolution having axes perpendicular to the free-stream direction .

Rank# --> 8 Doc-ID #379

Score --> 3.8827948808377486

Document Title -->

reverse flow and variational theorems for lifting surfaces in nonstationary compressible flow .

Rank# --> 9 Doc-ID #1155
Score --> 3.8661849398215486
Document Title -->
some experimental investigations on the influence of wall boundary layers upon wind tunnel measurements at high subsonic speeds .

Rank# --> 10 Doc-ID #1336
Score --> 3.8585781724293793
Document Title -->
studies of the use of freon-12 as a wind tunnel testing medium .

- Query 8:

Enter the input query:

what methods -dash exact or approximate -dash are presently available
for predicting body pressures at angle of attack

Query After Indexing --> present, dash, what, or, exact, avail, ar, method, approxim,
Top 10 docs for the query under Weight-1 --> 1248, 476, 292, 122, 792, 1392, 124,
433, 1072, 1224,

Rank # --> 1 Doc-ID #1248

Score --> 0.9832934979781596

Document Title -->

an analytic extension of the shock-expansion method .

Rank # --> 2 Doc-ID #476

Score --> 0.7681037818402795

Document Title -->

the blasius equation with three-point boundary conditions .

Rank # --> 3 Doc-ID #292

Score --> 0.7585226482931235

Document Title -->

rapid laminar boundary layer calculations by piece-wise application of similar solutions .

Rank # --> 4 Doc-ID #122

Score --> 0.7525087035803966

Document Title -->

a simplified approximate method for the calculation of the pressure around conical bodies of arbitrary shape in supersonic and hypersonic

Rank # --> 5 Doc-ID #792

Score --> 0.7262459247163033

Document Title -->

some low speed problems of high speed aircraft .

Rank # --> 6 Doc-ID #1392

Score --> 0.6524029543515474

Document Title -->

the solution of small displacement, stability or vibration problems concerning a flat rectangular panel when the

Rank # --> 7 Doc-ID #124

Score --> 0.6240047422205892

Document Title -->

a summary of the supersonic pressure drag of bodies of revolution .

Rank # --> 8 Doc-ID #433
 Score --> 0.6071519906486603
 Document Title -->
 application of two dimensional vortex theory to the prediction of flow fields behind
 wings of wing-body

Rank # --> 9 Doc-ID #1072
 Score --> 0.5675875780484715
 Document Title -->
 ignition and combustion in a laminar mixing zone .

Rank # --> 10 Doc-ID #1224
 Score --> 0.5650804592428885
 Document Title -->
 on the plk method and the supersonic blunt-body problem .

Top 10 docs for the query under Weight-2 --> 1248, 292, 122, 557, 476, 1392, 1224,
 124, 792, 701,

Rank# --> 1 Doc-ID #1248
 Score --> 3.5273364777450986
 Document Title -->
 an analytic extension of the shock-expansion method .

Rank# --> 2 Doc-ID #292
 Score --> 3.174726557269461
 Document Title -->
 rapid laminar boundary layer calculations by piece-wise application of similar
 solutions .

Rank# --> 3 Doc-ID #122
 Score --> 3.1529685672799794
 Document Title -->
 a simplified approximate method for the calculation of the pressure around conical
 bodies of arbitrary shape in supersonic and hypersonic

Rank# --> 4 Doc-ID #557
 Score --> 2.789901499863266
 Document Title -->
 a numerical comparison between exact and approximate theories of hypersonic inviscid
 flow past slender blunt

Rank# --> 5 Doc-ID #476
 Score --> 2.723637589754047
 Document Title -->
 the blasius equation with three-point boundary conditions .

Rank# --> 6 Doc-ID #1392
 Score --> 2.7200738628746017
 Document Title -->
 the solution of small displacement, stability or vibration problems concerning a flat
 rectangular panel when the

Rank# --> 7 Doc-ID #1224
 Score --> 2.693967279961721
 Document Title -->
 on the plk method and the supersonic blunt-body problem .

Rank# --> 8 Doc-ID #124
 Score --> 2.6873459546242224

Document Title -->
a summary of the supersonic pressure drag of bodies of revolution .

Rank# --> 9 Doc-ID #792

Score --> 2.636677290643449

Document Title -->

some low speed problems of high speed aircraft .

Rank# --> 10 Doc-ID #701

Score --> 2.5962908936186313

Document Title -->

numerical determination of indicial lift of a two-dimensional sinking airfoil at subsonic mach numbers from oscillatory lift coefficients with

- Query 9:

Enter the input query:

[papers on internal /slip flow/ heat transfer studies](#)

Query After Indexing --> transfer, paper, intern, slip, on, flow, heat, studi,
Top 10 docs for the query under Weight-1 --> 550, 21, 22, 45, 571, 306, 102, 270, 1215, 1204,

Rank # --> 1 Doc-ID #550

Score --> 0.9616169068141807

Document Title -->

laminar heat transfer in tubes under slip-flow conditions .

Rank # --> 2 Doc-ID #21

Score --> 0.8989056342756414

Document Title -->

on heat transfer in slip flow .

Rank # --> 3 Doc-ID #22

Score --> 0.8262080402234885

Document Title -->

on slip-flow heat transfer to a flat plate .

Rank # --> 4 Doc-ID #45

Score --> 0.7985745650875649

Document Title -->

an investigation of separated flows, part ii: flow in the cavity and heat transfer .

Rank # --> 5 Doc-ID #571

Score --> 0.7118972336773955

Document Title -->

heat transfer to flat plate in high temperature rarefied ultra-high mach number flow .

Rank # --> 6 Doc-ID #306

Score --> 0.6604425397082113

Document Title -->

second approximation to laminar compressible boundary layer on flat plate in slip flow .

Rank # --> 7 Doc-ID #102

Score --> 0.6278967963201991

Document Title -->

advantages and limitations of models .

Rank # --> 8 Doc-ID #270

Score --> 0.6230253825563468

Document Title -->
on combined free and forced convection laminar magnetohydrodynamicflow and heat transfer in channels with transverse

Rank # --> 9 Doc-ID #1215

Score --> 0.6222114679571656

Document Title -->

the effect of slip particularly for highly cooled walls .

Rank # --> 10 Doc-ID #1204

Score --> 0.6107741187496941

Document Title -->

experimental effect of bluntness and gas rarefactionon drag coefficients and stagnation heat transfer on

Top 10 docs for the query under Weight-2 --> 550, 45, 21, 489, 270, 572, 1268, 89, 306, 22,

Rank# --> 1 Doc-ID #550

Score --> 3.517783590886565

Document Title -->

laminar heat transfer in tubes under slip-flow conditions .

Rank# --> 2 Doc-ID #45

Score --> 3.4644767160739796

Document Title -->

an investigation of separated flows, part ii: flowin the cavity and heat transfer .

Rank# --> 3 Doc-ID #21

Score --> 2.9914317617715867

Document Title -->

on heat transfer in slip flow .

Rank# --> 4 Doc-ID #489

Score --> 2.7632824175021584

Document Title -->

on calculation of the laminar separation point andresults of certain flows .

Rank# --> 5 Doc-ID #270

Score --> 2.7210007388170276

Document Title -->

on combined free and forced convection laminar magnetohydrodynamicflow and heat transfer in channels with transverse

Rank# --> 6 Doc-ID #572

Score --> 2.6321673589056607

Document Title -->

boundary layer displacement and leading edge bluntness effects in hightemperature hypersonic flow .

Rank# --> 7 Doc-ID #1268

Score --> 2.578248599731011

Document Title -->

stable combustion of a high-velocity gas in a heatedboundary layer .

Rank# --> 8 Doc-ID #89

Score --> 2.555260155927946

Document Title -->

an investigation of separated flows, part i: the pressurefield .

Rank# --> 9 Doc-ID #306
Score --> 2.5234206940817083
Document Title -->
second approximation to laminar compressible boundarylayer on flat plate in slip flow
.

Rank# --> 10 Doc-ID #22
Score --> 2.499911383173221
Document Title -->
on slip-flow heat transfer to a flat plate .

- Query 10:

Enter the input query:

are real-gas transport properties for air available over a wide range of
enthalpies and densitiesQuery After Indexing --> for, a, ar, avail, wide, ga, real,
of, over, transport, rang, air, properti,

Top 10 docs for the query under Weight-1 --> 493, 1264, 302, 1199, 1009, 524, 583,
1286, 691, 185,

Rank # --> 1 Doc-ID #493
Score --> 1.0690508495749158
Document Title -->
real-gas laminar boundary layer skin friction and heattransfer .

Rank # --> 2 Doc-ID #1264
Score --> 0.9798806887563501
Document Title -->
boundary layer transition and heat transfer in shocktubes .

Rank # --> 3 Doc-ID #302
Score --> 0.9775879687581719
Document Title -->
approximations for the thermodynamic and transport properties of hightemperature air
.

Rank # --> 4 Doc-ID #1199
Score --> 0.9589033190751117
Document Title -->
theoretical investigations of a supersonic laminarboundary layer with foreign-gas
injection .

Rank # --> 5 Doc-ID #1009
Score --> 0.9427853846472453
Document Title -->
free-flight measurements of the static and dynamic

Rank # --> 6 Doc-ID #524
Score --> 0.9270421289257548
Document Title -->
stagnation point heat transfer in partially ionizedair .

Rank # --> 7 Doc-ID #583
Score --> 0.8675054756892546

Document Title -->
influence coefficients for real gases .
Rank # --> 8 Doc-ID #1286
Score --> 0.8576889011773325
Document Title -->
equilibrium real-gas performance charts for a shypersonicshock-tube wind-tunnel
employing nitrogen .

Rank # --> 9 Doc-ID #691
Score --> 0.8453911235040166
Document Title -->
calculation procedure for thermodynamic transport, and flow propertiesof the
combustion products of a hydrocarbon fuel mixture burned in air

Rank # --> 10 Doc-ID #185
Score --> 0.8306892166657812
Document Title -->
some possibilities of using gas mixtures other than inaerodynamic research .

Top 10 docs for the query under Weight-2 --> 1264, 302, 583, 493, 576, 1009, 421,
1286, 1313, 1199,
Rank# --> 1 Doc-ID #1264
Score --> 4.413968546558338
Document Title -->
boundary layer transition and heat transfer in shocktubes .

Rank# --> 2 Doc-ID #302
Score --> 4.351776937282433
Document Title -->
approximations for the thermodynamic and transport properties of hightemperature air
.

Rank# --> 3 Doc-ID #583
Score --> 4.297556025929832
Document Title -->
influence coefficients for real gases .
Rank# --> 4 Doc-ID #493
Score --> 4.202818505207755
Document Title -->
real-gas laminar boundary layer skin friction and heattransfer .

Rank# --> 5 Doc-ID #576
Score --> 3.892842619225333
Document Title -->
viscous and inviscid stagnation flow in a dissociated hypervelocity free stream .

Rank# --> 6 Doc-ID #1009
Score --> 3.878824925867775
Document Title -->
free-flight measurements of the static and dynamic
Rank# --> 7 Doc-ID #421
Score --> 3.8415784415396437
Document Title -->
analytic study of induced pressure on long bodies ofrevolution with varying nose
bluntness at hypersonic

Rank# --> 8 Doc-ID #1286
Score --> 3.839583452123356
Document Title -->
equilibrium real-gas performance charts for a shypersonicshock-tube wind-tunnel
employing nitrogen .

Rank# --> 9 Doc-ID #1313
Score --> 3.8339849037605047
Document Title -->
on the flow in a reflected shock tunnel .

Rank# --> 10 Doc-ID #1199
Score --> 3.762547405729253
Document Title -->
theoretical investigations of a supersonic laminarboundary layer with foreign-gas
injection .

- Query 11:

Enter the input query:

is it possible to find an analytical, similar solution of the strong
blast wave problem in the newtonian approximationQuery After Indexing --> solut, to,
analyt, of, is, it, strong, an, possibl, the, find, similar,
Top 10 docs for the query under Weight-1 --> 72, 1280, 495, 184, 472, 1375, 738, 25,
341, 540,

Rank # --> 1 Doc-ID #72
Score --> 0.7137950000702598
Document Title -->
boundary layer behind shock or thin expansion wavemoving into stationary fluid .

Rank # --> 2 Doc-ID #1280
Score --> 0.7111623052344627
Document Title -->
wings with minimum drag due to lift in supersonic flow .

Rank # --> 3 Doc-ID #495
Score --> 0.6456642400888903
Document Title -->
on similar solutions for strong blast waves and theirapplication to steady hypersonic
flow .

Rank # --> 4 Doc-ID #184
Score --> 0.6343875836658113
Document Title -->
scale models for thermo-aeroelastic research .

Rank # --> 5 Doc-ID #472
Score --> 0.6274690804995545
Document Title -->
waves in supersonic flow .

Rank # --> 6 Doc-ID #1375
Score --> 0.6191088181493165
Document Title -->
an approximate solution for the axisymmetric jet of a laminarcompressible fluid .

Rank # --> 7 Doc-ID #738

Score --> 0.6170025532071973
Document Title -->
finding zero's of arbitrary functions .
Rank # --> 8 Doc-ID #25
Score --> 0.6062622473468715
Document Title -->
inviscid hypersonic flow over blunt-nosed slender bodies .
Rank # --> 9 Doc-ID #341
Score --> 0.6026856586872457
Document Title -->
the analytical design of an axially symmetric lavalnozzle for a parallel and uniform jet .

Rank # --> 10 Doc-ID #540
Score --> 0.6023719217747472
Document Title -->
use of local similarity concepts in hypersonic viscousinteraction problems .

Top 10 docs for the query under Weight-2 --> 1280, 1375, 495, 472, 184, 28, 498, 72, 540, 304,

Rank# --> 1 Doc-ID #1280
Score --> 4.34074079448985
Document Title -->
wings with minimum drag due to lift in supersonic flow .

Rank# --> 2 Doc-ID #1375
Score --> 4.2954038105570405
Document Title -->
an approximate solution for the axisymmetric jet of a laminarcompressible fluid .

Rank# --> 3 Doc-ID #495
Score --> 4.0847925208715745
Document Title -->
on similar solutions for strong blast waves and theirapplication to steady hypersonic flow .

Rank# --> 4 Doc-ID #472
Score --> 4.06791393949192
Document Title -->
waves in supersonic flow .

Rank# --> 5 Doc-ID #184
Score --> 4.06486411760756
Document Title -->
scale models for thermo-aeroelastic research .

Rank# --> 6 Doc-ID #28
Score --> 3.994517294807237
Document Title -->
a note on the explosion solution of sedov with applicationto the newtonian theory of unsteady hypersonic flow .

Rank# --> 7 Doc-ID #498
Score --> 3.9816713532523953
Document Title -->
calculation of potential flow about bodies of revolutionhaving axes perpendicular to the free-stream direction .

Rank# --> 8 Doc-ID #72
Score --> 3.92967110055172
Document Title -->
boundary layer behind shock or thin expansion wavemoving into stationary fluid .

Rank# --> 9 Doc-ID #540
Score --> 3.908845699289341
Document Title -->
use of local similarity concepts in hypersonic viscousinteraction problems .

Rank# --> 10 Doc-ID #304
Score --> 3.9048453424780067
Document Title -->
first-order approach to a strong interaction problem in hypersonic flow over an insulated flat plate .

- Query 12:

Enter the input query:

how can the aerodynamic performance of channel flow ground effect
machines be calculatedQuery After Indexing --> of, can, effect, how, aerodynam,
ground, perform, the, flow, channel,

Top 10 docs for the query under Weight-1 --> 624, 792, 543, 650, 941, 506, 33, 966,
1164, 270,

Rank # --> 1 Doc-ID #624
Score --> 1.0603258135716978
Document Title -->
cruise performance of channel-flow ground effect machines .

Rank # --> 2 Doc-ID #792
Score --> 0.7507458763521977
Document Title -->
some low speed problems of high speed aircraft .

Rank # --> 3 Doc-ID #543
Score --> 0.7049886144354498
Document Title -->
the stacking of compressor stage characteristics to give an overall compressor performance map .

Rank # --> 4 Doc-ID #650
Score --> 0.6992666174454154
Document Title -->
some design problems of hovercraft .

Rank # --> 5 Doc-ID #941
Score --> 0.621329951255441
Document Title -->
viscous compressible and incompressible flow in slenderchannels .

Rank # --> 6 Doc-ID #506
Score --> 0.6054442685525521
Document Title -->
a note on havelock's shallow-water wave-resistancecurves .

Rank # --> 7 Doc-ID #33

Score --> 0.5795743135048234

Document Title -->

the prospects for magneto-aerodynamics .

Rank # --> 8 Doc-ID #966

Score --> 0.5784883524149844

Document Title -->

on fully developed channel flows,. some solutions and limitations, and effects of compressibility, variable properties, and body forces .

Rank # --> 9 Doc-ID #1164

Score --> 0.5574845812097922

Document Title -->

effect of ground proximity on the aerodynamic characteristics of a four- engined vertical take-off and landing transport

Rank # --> 10 Doc-ID #270

Score --> 0.5570232561609465

Document Title -->

on combined free and forced convection laminar magnetohydrodynamic flow and heat transfer in channels with transverse

Top 10 docs for the query under Weight-2 --> 624, 792, 453, 917, 329, 798, 650, 506, 939, 237,

Rank# --> 1 Doc-ID #624

Score --> 3.7195308066683124

Document Title -->

cruise performance of channel-flow ground effect machines .

Rank# --> 2 Doc-ID #792

Score --> 3.453254006688058

Document Title -->

some low speed problems of high speed aircraft .

Rank# --> 3 Doc-ID #453

Score --> 3.032331001087691

Document Title -->

the influence of two-dimensional stream shear on airfoil maximum lift .

Rank# --> 4 Doc-ID #917

Score --> 2.9989208265353944

Document Title -->

a method of calculating the short period longitudinal stability derivatives of a wing in linearised unsteady

Rank# --> 5 Doc-ID #329

Score --> 2.96985781810045

Document Title -->

various aerodynamic characteristics in hypersonic rarefied gas flow .

Rank# --> 6 Doc-ID #798

Score --> 2.9580269750850903

Document Title -->

interaction between shock waves and boundary layers, with a note on the effects of the interaction of the performance of supersonic intakes .

Rank# --> 7 Doc-ID #650

Score --> 2.917493422468604

Document Title -->

some design problems of hovercraft .
Rank# --> 8 Doc-ID #506
Score --> 2.878938850705447
Document Title -->
a note on havelock's shallow-water wave-resistancecurves .

Rank# --> 9 Doc-ID #939
Score --> 2.789042258084998
Document Title -->
some explicit solutions for constant-temp . magnetogasdynamic channel flow .

Rank# --> 10 Doc-ID #237
Score --> 2.740432038665363
Document Title -->
a compressor routine test code .

- Query 13:

Enter the input query:

what is the basic mechanism of the transonic aileron buzz

Query After Indexing --> of, is, what, basic, mechan, buzz, transon, the, aileron,
Top 10 docs for the query under Weight-1 --> 496, 903, 520, 1268, 643, 440, 313,
1072, 199, 262,

Rank # --> 1 Doc-ID #496
Score --> 1.454476837669923
Document Title -->
a theory of transonic aileron buzz, neglecting viscouseffects .

Rank # --> 2 Doc-ID #903
Score --> 0.8716797684846711
Document Title -->
two dimensional transonic unsteady flow with shockwaves .

Rank # --> 3 Doc-ID #520
Score --> 0.8711359836106132
Document Title -->
wing-tail interference as a cause of 'magnus' effectson a finned missile .

Rank # --> 4 Doc-ID #1268
Score --> 0.6358268431675868
Document Title -->
stable combustion of a high-velocity gas in a heatedboundary layer .

Rank # --> 5 Doc-ID #643
Score --> 0.620930510097211
Document Title -->
an investigation of wing-aileron flutter using groundlaunched rocket models .

Rank # --> 6 Doc-ID #440
Score --> 0.5765750833820844
Document Title -->
compilation of information on the transonic attachmentof flows at the leading edge of
airfoils .

Rank # --> 7 Doc-ID #313

Score --> 0.5624061934193467

Document Title -->

on alternative forms for the basic equations of transonicflow theory .

Rank # --> 8 Doc-ID #1072

Score --> 0.5540404633627558

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank # --> 9 Doc-ID #199

Score --> 0.5429849842620897

Document Title -->

measurement of two dimensional derivatives on a wing-aileron-tab system .

Rank # --> 10 Doc-ID #262

Score --> 0.5385664696949599

Document Title -->

the formation of a blast wave by a very intense explosion .

Top 10 docs for the query under Weight-2 --> 496, 903, 520, 440, 313, 38, 415, 880, 1268, 797,

Rank# --> 1 Doc-ID #496

Score --> 3.4574860681423187

Document Title -->

a theory of transonic aileron buzz, neglecting viscouseffects .

Rank# --> 2 Doc-ID #903

Score --> 2.8696309087437513

Document Title -->

two dimensional transonic unsteady flow with shockwaves .

Rank# --> 3 Doc-ID #520

Score --> 2.7972082609225195

Document Title -->

wing-tail interference as a cause of 'magnus' effectson a finned missile .

Rank# --> 4 Doc-ID #440

Score --> 2.414153638796839

Document Title -->

compilation of information on the transonic attachmentof flows at the leading edge of airfoils .

Rank# --> 5 Doc-ID #313

Score --> 2.3995242531000773

Document Title -->

on alternative forms for the basic equations of transonicflow theory .

Rank# --> 6 Doc-ID #38

Score --> 2.38679557178159

Document Title -->

on the prediction of mixed subsonic/supersonic pressuredistributions .

Rank# --> 7 Doc-ID #415

Score --> 2.365389019807633

Document Title -->

the aerodynamic design of section shapes for swept wings .

Rank# --> 8 Doc-ID #880

Score --> 2.365389019807633
Document Title -->
the design and testing of supersonic flutter models .
Rank# --> 9 Doc-ID #1268
Score --> 2.278739995062994
Document Title -->
stable combustion of a high-velocity gas in a heated boundary layer .

Rank# --> 10 Doc-ID #797
Score --> 2.1993031017132543
Document Title -->
a study of the effect of leading-edge modifications on the flow over a 50 degree sweptback wing at transonic speeds .

- Query 14:

Enter the input query:
papers on shock-sound wave interaction

Query After Indexing --> paper, sound, wave, on, interact, shock,
Top 10 docs for the query under Weight-1 --> 64, 296, 798, 132, 170, 402, 439, 1303, 572, 335,
Rank # --> 1 Doc-ID #64
Score --> 1.0052672547418666
Document Title -->
unsteady oblique interaction of a shock wave with planar disturbances .

Rank # --> 2 Doc-ID #296
Score --> 0.7555528388311217
Document Title -->
notes on waves through gases at pressures small compared with the magnetic pressure, with applications to upper

Rank # --> 3 Doc-ID #798
Score --> 0.7366676204601484
Document Title -->
interaction between shock waves and boundary layers, with a note on the effects of the interaction of the performance of supersonic intakes .

Rank # --> 4 Doc-ID #132
Score --> 0.7247566450266935
Document Title -->
viscosity effects in sound waves of finite amplitude: in survey in mechanics .

Rank # --> 5 Doc-ID #170
Score --> 0.7223449165282962
Document Title -->
the interaction of a reflected shock wave with the boundary layer in a shock tube .

Rank # --> 6 Doc-ID #402
Score --> 0.6799592231997439
Document Title -->
magnetohydrodynamics shocks .

Rank # --> 7 Doc-ID #439
Score --> 0.6775821251529374

Document Title -->
a factor affecting transonic leading edge flow separation .
Rank # --> 8 Doc-ID #1303
Score --> 0.6661924505219364
Document Title -->
air pressure on a cone moving at high speeds .
Rank # --> 9 Doc-ID #572
Score --> 0.6454481227914477
Document Title -->
boundary layer displacement and leading edge bluntness effects in high temperature
hypersonic flow .

Rank # --> 10 Doc-ID #335
Score --> 0.6399215373099577
Document Title -->
the interaction between boundary layer and shock waves in transonic flow .

Top 10 docs for the query under Weight-2 --> 64, 1327, 170, 798, 439, 1303, 572,
1313, 329, 256,
Rank# --> 1 Doc-ID #64
Score --> 2.687365417572736
Document Title -->
unsteady oblique interaction of a shock wave with planar disturbances .

Rank# --> 2 Doc-ID #1327
Score --> 2.5059049643399804
Document Title -->
on the propagation and structure of the blast wave .
Rank# --> 3 Doc-ID #170
Score --> 2.41721978314782
Document Title -->
the interaction of a reflected shock wave with the boundary layer in a shock tube .

Rank# --> 4 Doc-ID #798
Score --> 2.371717265778022
Document Title -->
interaction between shock waves and boundary layers, with a note on the effects of the
interaction of the performance of supersonic intakes .

Rank# --> 5 Doc-ID #439
Score --> 2.362829986941639
Document Title -->
a factor affecting transonic leading edge flow separation .
Rank# --> 6 Doc-ID #1303
Score --> 2.3423717204456618
Document Title -->
air pressure on a cone moving at high speeds .
Rank# --> 7 Doc-ID #572
Score --> 2.2688746455755706
Document Title -->
boundary layer displacement and leading edge bluntness effects in high temperature
hypersonic flow .

Rank# --> 8 Doc-ID #1313
Score --> 2.2533802453750313

Document Title -->
on the flow in a reflected shock tunnel .
Rank# --> 9 Doc-ID #329
Score --> 2.2262938954419274
Document Title -->
various aerodynamic characteristics in hypersonic rarefiedgas flow .

Rank# --> 10 Doc-ID #256
Score --> 2.0426536110268523
Document Title -->
an experimental study of the glancing interaction between a shock wave and a turbulent boundary layer .

- Query 15:

Enter the input query:
material properties of photoelastic materials

Query After Indexing --> of, materi, photoelast, properti,
Top 10 docs for the query under Weight-1 --> 462, 463, 82, 1025, 542, 1043, 1099, 1065, 1340, 982,

Rank # --> 1 Doc-ID #462

Score --> 0.9768766129992472

Document Title -->

photo-thermoelasticity .

Rank # --> 2 Doc-ID #463

Score --> 0.5234373519543578

Document Title -->

physical properties of plastics for photo-thermoelastic investigation .

Rank # --> 3 Doc-ID #82

Score --> 0.49783231331858646

Document Title -->

theoretical investigation of the ablation of a glass-type heat protection shield of varied material properties

Rank # --> 4 Doc-ID #1025

Score --> 0.4871409423502332

Document Title -->

note on creep buckling of columns .

Rank # --> 5 Doc-ID #542

Score --> 0.47386935786583695

Document Title -->

biot's variational principle in heat conduction .

Rank # --> 6 Doc-ID #1043

Score --> 0.4602277822992016

Document Title -->

on transverse vibrations of thin, shallow elastic shells .

Rank # --> 7 Doc-ID #1099

Score --> 0.4375995650353729

Document Title -->

a theoretical study of stagnation point ablation .

Rank # --> 8 Doc-ID #1065

Score --> 0.4322345147379937
Document Title -->
a free-flight investigation of ablation of a bluntbody to a mach number of 13 .1.

Rank # --> 9 Doc-ID #1340
Score --> 0.4203901887412942
Document Title -->
method of controlling stiffness properties of a solid-constructionmodel wing .

Rank # --> 10 Doc-ID #982
Score --> 0.40267289507503223
Document Title -->
the temperature history in a thick skin subjected to laminar heatingduring entry into the atmosphere .

Top 10 docs for the query under Weight-2 --> 462, 463, 1043, 1065, 1099, 1340, 817, 890, 981, 1027,

Rank# --> 1 Doc-ID #462
Score --> 2.37732353078699
Document Title -->
photo-thermoelasticity .
Rank# --> 2 Doc-ID #463
Score --> 1.5749058787532102
Document Title -->
physical properties of plastics for photo-thermoelasticinvestigation .

Rank# --> 3 Doc-ID #1043
Score --> 1.5631452321918209
Document Title -->
on transverse vibrations of thin, shallow elastic shells .
Rank# --> 4 Doc-ID #1065
Score --> 1.535703723548579
Document Title -->
a free-flight investigation of ablation of a bluntbody to a mach number of 13 .1.

Rank# --> 5 Doc-ID #1099
Score --> 1.535703723548579
Document Title -->
a theoretical study of stagnation point ablation .

Rank# --> 6 Doc-ID #1340
Score --> 1.535703723548579
Document Title -->
method of controlling stiffness properties of a solid-constructionmodel wing .

Rank# --> 7 Doc-ID #817
Score --> 1.5026210268265174
Document Title -->
loading paths and the incremental stress law .

Rank# --> 8 Doc-ID #890
Score --> 1.5026210268265174
Document Title -->
comments on 'thermal buckling of clamped cylindrical shells' .

Rank# --> 9 Doc-ID #981
Score --> 1.5026210268265174

Document Title -->
solutions to the heat-conduction equation with time dependent boundaryconditions .

Rank# --> 10 Doc-ID #1027
Score --> 1.5026210268265174
Document Title -->
note on creep buckling of columns .

- Query 16:

Enter the input query:
can the transverse potential flow about a body of revolution be
calculated efficiently by an electronic computer Query After Indexing --> of,
transvers, bodi, can, revolut, a, about, the, flow, potenti, be,

Top 10 docs for the query under Weight-1 --> 106, 498, 927, 1259, 494, 1255, 814,
801, 528, 234,

Rank # --> 1 Doc-ID #106
Score --> 0.9260372623502097

Document Title -->
the transverse potential flow past a body of revolution .

Rank # --> 2 Doc-ID #498
Score --> 0.9010816169329279

Document Title -->
calculation of potential flow about bodies of revolutionhaving axes perpendicular to
the free-stream direction .

Rank # --> 3 Doc-ID #927
Score --> 0.7424956871978363

Document Title -->
investigation of normal force distributions and wakevortex characteristics of bodies
of revolution at supersonic

Rank # --> 4 Doc-ID #1259
Score --> 0.6788881710102012

Document Title -->
second-order theory for unsteady supersonic flow pastslender pointed bodies of
revolution .

Rank # --> 5 Doc-ID #494
Score --> 0.6576084468105108

Document Title -->
axisymmetric viscous flow plast very slender bodiesof revolution .

Rank # --> 6 Doc-ID #1255
Score --> 0.6320992166892442

Document Title -->
the flow about a charged body moving in the lower atmosphere .

Rank # --> 7 Doc-ID #814
Score --> 0.6252664314534679

Document Title -->
stability derivatives of cones at supersonic speeds .

Rank # --> 8 Doc-ID #801
Score --> 0.6202724488811809

Document Title -->

experimental study of the equivalence of transonicflow about slender cone-cylinders of circular and elliptic

Rank # --> 9 Doc-ID #528

Score --> 0.6089744807690342

Document Title -->

first-order slip effects on the laminar boundary layer over a slenderbody of revolution with zero pressure gradient .

Rank # --> 10 Doc-ID #234

Score --> 0.5905024979625275

Document Title -->

a second order shock-expansion method applicable tobodies of revolution near zero lift .

Top 10 docs for the query under Weight-2 --> 1259, 1255, 927, 801, 106, 498, 225, 373, 528, 1304,

Rank# --> 1 Doc-ID #1259

Score --> 4.1419582830108155

Document Title -->

second-order theory for unsteady supersonic flow pastslender pointed bodies of revolution .

Rank# --> 2 Doc-ID #1255

Score --> 3.9324818575373

Document Title -->

the flow about a charged body moving in the lower atmosphere .

Rank# --> 3 Doc-ID #927

Score --> 3.924691355856978

Document Title -->

investigation of normal force distributions and wakevortex characteristics of bodies of revolution at supersonic

Rank# --> 4 Doc-ID #801

Score --> 3.9205682861386046

Document Title -->

experimental study of the equivalence of transonicflow about slender cone-cylinders of circular and elliptic

Rank# --> 5 Doc-ID #106

Score --> 3.8736388861250712

Document Title -->

the transverse potential flow past a body of revolution .

Rank# --> 6 Doc-ID #498

Score --> 3.8686808311189167

Document Title -->

calculation of potential flow about bodies of revolutionhaving axes perpendicular to the free-stream direction .

Rank# --> 7 Doc-ID #225

Score --> 3.790314462180318

Document Title -->

elliptic cones alone and with wings at supersonic speeds .

Rank# --> 8 Doc-ID #373

Score --> 3.7757662951030553

Document Title -->
the generalized expansion method and its application to bodies travelling at high supersonic airspeeds .

Rank# --> 9 Doc-ID #528

Score --> 3.6657690975684707

Document Title -->

first-order slip effects on the laminar boundary layer over a slender body of revolution with zero pressure gradient .

Rank# --> 10 Doc-ID #1304

Score --> 3.565458448509108

Document Title -->

newtonian flow over a surface . colston symposium on hypersonic flow,

- Query 17

Enter the input query:

can the three-dimensional problem of a transverse potential flow about a body of revolution be reduced to a two-dimensional problem

Query After Indexing --> of, dimension, transvers, can, a, about, three, problem, the, flow, potenti,

Top 10 docs for the query under Weight-1 --> 1281, 916, 372, 1072, 445, 1036, 315, 266, 1108, 1255,

Rank # --> 1 Doc-ID #1281

Score --> 0.754359340842098

Document Title -->

turbulent heat transfer on blunt-nosed bodies in two-dimensional and general three-dimensional hypersonic flow .

Rank # --> 2 Doc-ID #916

Score --> 0.6930696779696777

Document Title -->

the flow around oscillating low aspect ratio wings at transonic speeds .

Rank # --> 3 Doc-ID #372

Score --> 0.654837712972792

Document Title -->

an experimental investigation of flow about simple blunt bodies at a nominal mach number of 5.8.

Rank # --> 4 Doc-ID #1072

Score --> 0.6418185551929332

Document Title -->

ignition and combustion in a laminar mixing zone .

Rank # --> 5 Doc-ID #445

Score --> 0.6133910982733213

Document Title -->

on the application of mathieu functions in the theory of subsonic compressible flow past oscillating airfoils .

Rank # --> 6 Doc-ID #1036

Score --> 0.6128293972934543

Document Title -->
on transverse vibrations of thin, shallow elastic shells .
Rank # --> 7 Doc-ID #315
Score --> 0.6102384939826525
Document Title -->
scale effects at high subsonic and transonic speeds and methods for fixing transition
in model experiments .

Rank # --> 8 Doc-ID #266
Score --> 0.6004110773781437
Document Title -->
exact solution of the neumann problem . calculation for non- circulatory plane and
axially symmetric flows

Rank # --> 9 Doc-ID #1108
Score --> 0.5989058604951804
Document Title -->
a study of second-order supersonic flow theory .

Rank # --> 10 Doc-ID #1255
Score --> 0.5857530143622227
Document Title -->
the flow about a charged body moving in the lower atmosphere .
Top 10 docs for the query under Weight-2 --> 372, 577, 1281, 1108, 916, 266, 1255,
1235, 206, 315,

Rank# --> 1 Doc-ID #372
Score --> 3.706651615093143
Document Title -->
an experimental investigation of flow about simple blunt bodies at a nominal mach
number of 5. 8.

Rank# --> 2 Doc-ID #577
Score --> 3.6100671358761858
Document Title -->
on hypersonic similitude .

Rank# --> 3 Doc-ID #1281
Score --> 3.5956203400616036
Document Title -->
turbulent heat transfer on blunt-nosed bodies in two-dimensional and general three-
dimensional hypersonic flow .

Rank# --> 4 Doc-ID #1108
Score --> 3.532216729863169
Document Title -->
a study of second-order supersonic flow theory .

Rank# --> 5 Doc-ID #916
Score --> 3.521194054298413
Document Title -->
the flow around oscillating low aspect ratio wings at transonic speeds .

Rank# --> 6 Doc-ID #266
Score --> 3.5188315892201762
Document Title -->
exact solution of the neumann problem . calculation for non- circulatory plane and
axially symmetric flows

Rank# --> 7 Doc-ID #1255
Score --> 3.4887411989426895
Document Title -->
the flow about a charged body moving in the lower atmosphere .

Rank# --> 8 Doc-ID #1235
Score --> 3.47246402067029
Document Title -->
a theory of the two dimensional laminar boundary layer over a curved surface .

Rank# --> 9 Doc-ID #206
Score --> 3.4665850390298556
Document Title -->
the applications of the polygon method to the calculation of the compressible subsonic flow round two-dimensional

Rank# --> 10 Doc-ID #315
Score --> 3.4494428643885233
Document Title -->
scale effects at high subsonic and transonic speeds and methods for fixing transition in model experiments .

- Query 18

Enter the input query:
are experimental pressure distributions on bodies of revolution at angle
of attack available Query After Indexing --> of, bodi, pressur, revolut, experiment,
distribut, at, on, angl, ar,

Top 10 docs for the query under Weight-1 --> 197, 498, 234, 927, 1352, 225, 248, 25, 232, 56,

Rank # --> 1 Doc-ID #197
Score --> 0.8445106762786808
Document Title -->
pressure distributions on three bodies of revolution to determine the effect of reynolds number up to and

Rank # --> 2 Doc-ID #498
Score --> 0.818572952033299
Document Title -->
calculation of potential flow about bodies of revolution having axes perpendicular to the free-stream direction .

Rank # --> 3 Doc-ID #234
Score --> 0.8136219157676834
Document Title -->
a second order shock-expansion method applicable to bodies of revolution near zero lift .

Rank # --> 4 Doc-ID #927
Score --> 0.7899911710563582
Document Title -->
investigation of normal force distributions and wake vortex characteristics of bodies of revolution at supersonic

Rank # --> 5 Doc-ID #1352
Score --> 0.7731340591648304
Document Title -->
aerodynamic investigation of a parabolic body of revolution at mach number of 1. 92
and some effects of an annular

Rank # --> 6 Doc-ID #225
Score --> 0.7479345296458244
Document Title -->
elliptic cones alone and with wings at supersonic speeds .

Rank # --> 7 Doc-ID #248
Score --> 0.7448368744440435
Document Title -->
the application of lighthill formula for numerical calculation of pressure
distributions on bodies of

Rank # --> 8 Doc-ID #25
Score --> 0.7163135427755162
Document Title -->
inviscid hypersonic flow over blunt-nosed slender bodies .

Rank # --> 9 Doc-ID #232
Score --> 0.6966787489618461
Document Title -->
accuracy of approximate methods for predicting pressure on pointed non-lifting bodies
of revolution in supersonic

Rank # --> 10 Doc-ID #56
Score --> 0.6927198933781441
Document Title -->
an analysis of the applicability of the hypersonic similarity law to the study of the
flow about bodies

Top 10 docs for the query under Weight-2 --> 498, 234, 927, 225, 25, 248, 197, 232,
56, 801,

Rank# --> 1 Doc-ID #498
Score --> 4.614161070207155
Document Title -->
calculation of potential flow about bodies of revolution having axes perpendicular to
the free-stream direction .

Rank# --> 2 Doc-ID #234
Score --> 4.461728705682422
Document Title -->
a second order shock-expansion method applicable to bodies of revolution near zero
lift .

Rank# --> 3 Doc-ID #927
Score --> 4.38487224535042
Document Title -->
investigation of normal force distributions and wake vortex characteristics of bodies
of revolution at supersonic

Rank# --> 4 Doc-ID #225
Score --> 4.294824450549175
Document Title -->

elliptic cones alone and with wings at supersonic speeds .

Rank# --> 5 Doc-ID #25

Score --> 4.279410896907024

Document Title -->

inviscid hypersonic flow over blunt-nosed slender bodies .

Rank# --> 6 Doc-ID #248

Score --> 4.141053876592966

Document Title -->

the application of lighthill formula for numerical calculation of pressure distributions on bodies of

Rank# --> 7 Doc-ID #197

Score --> 4.08416847401171

Document Title -->

pressure distributions on three bodies of revolution to determine the effect of reynolds number up to and

Rank# --> 8 Doc-ID #232

Score --> 3.971786976447254

Document Title -->

accuracy of approximate methods for predicting pressure on pointed non-lifting bodies of revolution in supersonic

Rank# --> 9 Doc-ID #56

Score --> 3.9708408386686727

Document Title -->

an analysis of the applicability of the hypersonic similarity law to the study of the flow about bodies

Rank# --> 10 Doc-ID #801

Score --> 3.9524576308310815

Document Title -->

experimental study of the equivalence of transonic flow about slender cone-cylinders of circular and elliptic

- Query 19:

Enter the input query:

does there exist a good basic treatment of the dynamics of re-entry
combining consideration of realistic effects with relative simplicity of
results

Query After Indexing --> of, basic, entri, treatment, there, a, good, doe, the, re,
exist, dynam,

Top 10 docs for the query under Weight-1 --> 453, 274, 1219, 1346, 554, 716, 1000,
1296, 82, 1072,

Rank # --> 1 Doc-ID #453

Score --> 0.8466186597847499

Document Title -->

the influence of two-dimensional stream shear on airfoil maximum lift .

Rank # --> 2 Doc-ID #274

Score --> 0.8313675436242867

Document Title -->

analysis of quartz and teflon shields for a particular re-entry mission .

Rank # --> 3 Doc-ID #1219
Score --> 0.783682272930567
Document Title -->
determination of lift or drag programs to minimizere-entry heating .

Rank # --> 4 Doc-ID #1346
Score --> 0.7586106363712696
Document Title -->
modulated entry .

Rank # --> 5 Doc-ID #554
Score --> 0.7567724944827677
Document Title -->
generalized heat transfer formulas and graphs .

Rank # --> 6 Doc-ID #716
Score --> 0.7146302897773218
Document Title -->
study of the oscillatory motion of manned vehiclesentering the earth's atmosphere .

Rank # --> 7 Doc-ID #1000
Score --> 0.7111286833922401
Document Title -->
free-flight measurements of the static and dynamicstability and drag of a 10 blunted
cone at mach numbers

Rank # --> 8 Doc-ID #1296
Score --> 0.7039296501472854
Document Title -->
non-equilibrium expansions of air with coupled chemicalreactions .

Rank # --> 9 Doc-ID #82
Score --> 0.6858699663567758
Document Title -->
theoretical investigation of the ablation of a glass-typeheat protection shield of
varied material properties

Rank # --> 10 Doc-ID #1072
Score --> 0.6797062558327576
Document Title -->
ignition and combustion in a laminar mixing zone .

Top 10 docs for the query under Weight-2 --> 274, 453, 1219, 1346, 716, 1295, 482,
1000, 1296, 1382,

Rank# --> 1 Doc-ID #274
Score --> 3.1536263292486955
Document Title -->
analysis of quartz and teflon shields for a particularre-entry mission .

Rank# --> 2 Doc-ID #453
Score --> 3.152826035861697
Document Title -->
the influence of two-dimensional stream shear on airfoil maximum lift .

Rank# --> 3 Doc-ID #1219
Score --> 2.9858323880586433
Document Title -->
determination of lift or drag programs to minimizere-entry heating .

Rank# --> 4 Doc-ID #1346
Score --> 2.9766934588482323
Document Title -->
modulated entry .
Rank# --> 5 Doc-ID #716
Score --> 2.9700451152811818
Document Title -->
study of the oscillatory motion of manned vehicles entering the earth's atmosphere .

Rank# --> 6 Doc-ID #1295
Score --> 2.8735476081276228
Document Title -->
recent advances in nonequilibrium dissociating gasdynamics .

Rank# --> 7 Doc-ID #482
Score --> 2.8502778277023415
Document Title -->
a re-examination of the use of the simple concepts for prediction the shape and location of detached shock

Rank# --> 8 Doc-ID #1000
Score --> 2.751601083127182
Document Title -->
free-flight measurements of the static and dynamic stability and drag of a 10 blunted cone at mach numbers

Rank# --> 9 Doc-ID #1296
Score --> 2.708451491439103
Document Title -->
non-equilibrium expansions of air with coupled chemical reactions .

Rank# --> 10 Doc-ID #1382
Score --> 2.7034054276671116
Document Title -->
the solution of the equations of the laminar boundary layer for schubauer's observed pressure distribution

- Query 20:

Enter the input query:
has anyone formally determined the influence of joule heating, produced
by the induced current, in magnetohydrodynamic free convection flows
under general conditions Query After Indexing --> joul, of, formal, anyon, determin,
influenc, produc, the, heat, ha,

Top 10 docs for the query under Weight-1 --> 500, 584, 458, 88, 416, 123, 14, 268, 262, 187,

Rank # --> 1 Doc-ID #500
Score --> 1.2501201148026713
Document Title -->
joule heating in magnetohydrodynamic free-convection flows .

Rank # --> 2 Doc-ID #584
Score --> 0.6406015131577794

Document Title -->
conduction of heat in a solid with a power law of heattransfer at its surface .

Rank # --> 3 Doc-ID #458
Score --> 0.6329688503635005

Document Title -->
a new series for calculation of steady laminar boundarylayer flows .

Rank # --> 4 Doc-ID #88
Score --> 0.569991249218883

Document Title -->
magnetohydrodynamic free-convection pipe flow .

Rank # --> 5 Doc-ID #416
Score --> 0.5675792169487437

Document Title -->
methods of boundary-layer control for postponing and alleviatingbuffeting and other effects of shock-induced separation .

Rank # --> 6 Doc-ID #123
Score --> 0.5261446684501748

Document Title -->
the downstream influence of mass transfer at the noseof a slender cone .

Rank # --> 7 Doc-ID #14
Score --> 0.5114807623666675

Document Title -->
piston theory - a new aerodynamic tool for the aeroelastician.

Rank # --> 8 Doc-ID #268
Score --> 0.48089256162497757

Document Title -->
several magnetohydrodynamic free-convection solutions .

Rank # --> 9 Doc-ID #262
Score --> 0.4801387273027055

Document Title -->
the formation of a blast wave by a very intense explosion .

Rank # --> 10 Doc-ID #187
Score --> 0.4622131729494194

Document Title -->
investigation of separated flows in supersonic and subsonicstreams with emphasis on the effect of transition .

Top 10 docs for the query under Weight-2 --> 500, 88, 123, 416, 584, 268, 263, 1177, 497, 604,

Rank# --> 1 Doc-ID #500
Score --> 3.286804044978603

Document Title -->
joule heating in magnetohydrodynamic free-convectionflows .

Rank# --> 2 Doc-ID #88
Score --> 2.8392399352230884

Document Title -->
magnetohydrodynamic free-convection pipe flow .

Rank# --> 3 Doc-ID #123
Score --> 2.662381694071101

Document Title -->

the downstream influence of mass transfer at the nose of a slender cone .

Rank# --> 4 Doc-ID #416

Score --> 2.64834021214647

Document Title -->

methods of boundary-layer control for postponing and alleviating buffeting and other effects of shock-induced separation .

Rank# --> 5 Doc-ID #584

Score --> 2.5014045338168165

Document Title -->

conduction of heat in a solid with a power law of heat transfer at its surface .

Rank# --> 6 Doc-ID #268

Score --> 2.3626937826825203

Document Title -->

several magnetohydrodynamic free-convection solutions .

Rank# --> 7 Doc-ID #263

Score --> 2.3446073342270166

Document Title -->

cylindrical shock waves produced by instantaneous energy release .

Rank# --> 8 Doc-ID #1177

Score --> 2.3294299514173167

Document Title -->

effects of rapid heating on strength of airframe components .

Rank# --> 9 Doc-ID #497

Score --> 2.3279973932108167

Document Title -->

theoretical and experimental investigation of thermal stresses in hypersonic aircraft wing structures .

Rank# --> 10 Doc-ID #604

Score --> 2.3279973932108167

Document Title -->

the 7 in. x 7 in. hypersonic wind tunnel at r.a.e., farnborough part iii - calibration of the flow in the working section .

Manual Analysis for Query 1:

Query: What similarity laws must be obeyed when constructing aeroelastic models of heated high speed aircraft?

Analysis:

- When tested manually only 4 out of the 10 documents retrieved under weight-1 turned out to be appropriate for the query.
- Relevant Docs are 486,329,51,14
- Rest of the results either focuses on the aeroelastic theory or on Aircraft but do not relate these two.

Relevance:

- Some documents get a higher Weight score even though they are non-relevant because a few query terms might have a large term frequency for that particular document.
- Since term Frequency appears in the numerator of both the weight functions given in the problem statement, it plays an important role in determining the final value of the weights.
- W1 is applied to plain documents, which are documents without fields; on the other hand W2 is applied to documents with structure. Unlike the W1, W2 model incorporates the structure of documents into the scoring process.