COMPUTER HIGH LEVEL LANGUAGES

Introduction

- In today's era, programmer use lots of languages for programming in which High-Level Languages have lots of contribution.
- To overcome the drawbacks of low-level Languages these High-Level Languages are developed.
- High-Level Languages are written in statements. Examples of High-Level Languages are FORTRAN, COBOL, Program JAVA, C# etc .
- These languages are procedure oriented.
- A program written in these languages in one computer can easily be used on another computer.

FORTRAN

- Abbreviated as 'Formula Translation'.
- Developed by IBM nearly in the 1950s.
- Used for scientific, engineering calculation and for mathematical operations.

gs_eq.F90

```
61    !!
62    !! Load equilibrium from file and constructs mesh and FE objects
63    !!
64    !! @note Should only be used via class \ref psi_gs_eq or children
65    !---------------------------------------------------------------------------
66    SUBROUTINE gs_setup(self)
67    CLASS(psi_gs_eq), INTENT(inout) :: self
68    INTEGER(4) :: i,io_unit
69    REAL(8) :: pmin
70    STACK_PUSH
71    !---Load GS grid
72    CALL trimesh_load(self%mesh,TRIM(self%grid_file))
73    CALL trimesh_local_setup(self%mesh)
74    !---Load GS field (order)
75    OPEN(NEWUNIT=io_unit,FILE=TRIM(self%field_file))
76    READ(io_unit,*)self%order
77    ALLOCATE(self%lagrange)
78    CALL psi_lag_setup_trimesh(self%lagrange%
79    !---Load GS field (B,P)
80    ALLOCATE(self%Bvals(3,self%lagrange%ne),s
81    DO i=1,self%lagrange%ne
82      READ(io_unit,*)self%Bvals(:,i),self%Pva
83    END DO
84    CLOSE(io_unit)
85    !---
86    pmin=MINVAL(self%Pvals)
87    self%pmax=MAXVAL(self%Pvals)
88    !
89    self%P_interp%vals=>self%Pvals
90    self%P_interp%lag_rep=>self%lagrange
```

```
bc
be
cache_native                CLASS(psi_field)
cache_PETSc
ce
delete()
dim
fmap
global
gstruct
kee
kef
```

Ln 78, Col 42 Spaces: 2 UTF-8 LF Fortran

COBOL

- Abbreviated as 'Common Business Oriented Language'.
- Developed by U.S. Government committee in 1960.
- Widely used in past for business applications and data processing.
- It supports a limited number of numeric operations.
- Object Oriented version of COBOL is Visual COBOL.

COBOL

```
EDIT       MTH.COBOL.SRCLIB(PERFTHRU) - 01.00              Columns 00001 00072
Command ===>                                                Scroll ===> CSR
=COLS> ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
****** ***************************** Top of Data ********************************
000100          IDENTIFICATION DIVISION.
000200          PROGRAM-ID. PERFTHRU.
000300          ENVIRONMENT DIVISION.
000400          DATA DIVISION.
000500          WORKING-STORAGE SECTION.
000600          01 STD-MARKS                    PIC 9(03).
000700          PROCEDURE DIVISION.
000800              PERFORM DISP-CLASS
000900                 THRU DISP-CLASS-EXIT.
001000              STOP RUN.
001100        DISP-CLASS.
001200              ACCEPT STD-MARKS.
001300              EVALUATE STD-MARKS
001400                 WHEN 60 THRU 100
001500                      DISPLAY 'STUDENT GOT FIRST CLASS   '
001600                 WHEN 50 THRU 59
001700                      DISPLAY 'STUDENT GOT SECOND CLASS  '
001800                 WHEN 35 THRU 49
001900                      DISPLAY 'STUDENT GOT THIRD CLASS   '
002000                 WHEN OTHER
002100                      DISPLAY 'STUDENT FAILED            '
002200              END-EVALUATE.
002300        DISP-CLASS-EXIT.
002400              EXIT.
****** ***************************** Bottom of Data *****************************
```

BASIC

- Abbreviated as 'Beginner's All Purpose Symbolic Instruction Code'.
- Developed by Dartmouth college in 1965.
- Used for scientific and engineering operations.
- It is very easy and simple language.

Visual Basic

- It is generally called scripting language which is used for combining small program written in BASIC Language.
- This tool is mostly used for development of Windows applications.
- Development of Windows apps in C is difficult that's why this language is created.
- It is object Oriented programming language.

Visual Basic

XamarinFormsVB - Microsoft Visual Studio

Quick Launch (Ctrl+Q)

FILE EDIT VIEW PROJECT BUILD DEBUG TEAM TOOLS TEST ANALYZE WINDOW HELP Craig Dunn

Page2.vb*

(General) (Declarations)

```
Imports Xamarin.Forms

Public Class Page2
    Inherits ContentPage

    Public Sub New()
        Dim label = New Label With {.XAlign = TextAlignment.Center,
                                    .FontSize = Device.GetNamedSize(NamedS
                                    .Text = "Visual Basic ContentPage"}

        Dim button = New Button With {.Text = "Click me"}
        AddHandler button.Clicked, Async Sub(sender, e)
                                       Await DisplayAlert("Hello from VB",
                                   End Sub

        Dim stack = New StackLayout With {
            .VerticalOptions = LayoutOptions.Center
        }
        stack.Children.Add(label)
        stack.Children.Add(button)

        Content = stack
    End Sub
End Class
```

100 %

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'XamarinFormsVB' (3 projects)
- VisualBasicAppCode (Portable)
  - My Project
  - App.vb
  - packages.config
  - Page2.vb
- **XamarinForms.Droid**
- XamarinForms.iOS

Solution Expl... Team Explorer Class View

Properties Toolbox Document Outline

Output Error List Find Symbol Results

Ready Ln 2 Col 1 Ch 1 INS

C language

- Developed by Dennis Ritchie and Brain Kernighan at AT and T's Bell laboratory in 1972.
- It is a general purpose language.
- This language first used to write UNIX operating system.
- This language also used to write system software, drivers and Commercial software packages.
- C++ is an extension of C Language.
- C++ is developed by Bjarne Stroustrup in the year 1980.
- C++ is object Oriented language.

C language

```c
#include <stdio.h>
int main() {
    int number1, number2, sum;

    printf("Enter First Number: ");
    scanf("%d", &number1);

    printf("Enter Second Number: ");
    scanf("%d", &number2);

    // calculating sum
    sum = number1 + number2;

    printf("\nAddition of %d and %d is %d", number1, number2, sum);
    return 0;
}
```

PROLOG

- Abbreviated as 'Programming Logic'.
- Developed by University of Marseilles in 1972.
- Main application of this language is for Artificial Intelligence.
- This language is capable of handling large number of databases.

PROLOG

Translator.pro (Generation\CodesGeneration\Translator\)

42:42 Insert Indent

```
    endPredicate : (string FileName) language apicall as "?GEN_endPredicate@Generatic
    p6transX : () language apicall as "?GEN_Trans6X@Generation@Compiler@VIP@@YG

clauses
    toTarget(PredicateRE, FileName, StackFramePresent, LocalStaticSize) :-
        CodeSegment = objectFile::getPredicateCodeSegment(),
        CurrentSegment = objectFile::setCurrentSegment(CodeSegment),
        if true = compilerState::isDiagnosticNewFeature then
            beginPredicate_P(PredicateRE, LocalStaticSize, FileName, StackFramePresent),
            viOptimization(),
            viGeneration(),
            endPredicate_P(FileName)
        else
            beginPredicate(PredicateRE, LocalStaticSize, log::writeString, FileName, Stackl
            p6transX(),
            endPredicate(FileName),
            virType::vi_ClearIndex()
        end if,
        _ = objectFile::setCurrentSegment(CurrentSegment).

% ---

class facts - p6trans_db
    predicateRE : referedEntity := cReferedEntitiesManagement::absentRE_const.
    lastLineNo : core::lineNumber := virType::absentLineNo.
    currentPredEntryPC : objectFile::programCount := 0.
    needsPredicateProfiling : boolean := "bug",
    localStaticSize : basicTypes::size := 0. % int ?
    aux : unsigned := 0.
    stackFramePresent : boolean := true.
```

LISP

- Abbreviated as 'list processing'.
- Developed by McCarthy in 1960.
- This language is mostly used in the artificial intelligence.
- This language is suitable for I/O handling and graphics.

LISP

```
992   ;;=============================================================================
993   ;;| FUNCTION : vle-lispinstall                                               |
994   ;;|---------------------------------------------------------------------------|
995   ;;| (vle-lispinstall)                                                         |
996   ;;|                                                                           |
997   ;;| returns the path (folder) where the Lisp engine is running from           |
998   ;;|                                                                           |
999   ;;| Arguments :  none                                                         |
1000  ;;|                                                                           |
1001  ;;| Return    :  the folder where the Lisp engine is running from as string   |
1002  ;;|                                                                           |
1003  ;;=============================================================================
1004  (if (not vle-lispinstall)
1005    (defun vle-lispinstall ( / fname fpath )
1006      (if *isAcad* (setq fname "acad.exe"))
1007      (if *isBcad* (setq fname "bricscad.exe"))
1008      (setq fpath (findfile fname))
1009      (if (not fpath) (setq fpath (findfile "bricscad")))
1010      (if fpath
1011        (vl-filename-directory fpath)
1012        "" ; unknown system
1013      )
1014    )
1015  )
```

SNOBOL

- Abbreviated as 'String Oriented Symbolic Language'.
- Developed nearly in 1960.
- Used for text processing.

```
47390000     % 2: ARITHMETIC OPERATOR:
47400000        BEGIN
47410000        IF (MKS←SP-2) < 0 THEN GO TO PERROR;
47420000        IF PTYPE[MKS] = -1
47430000           THEN AB ← PST[MKS]
47440000           ELSE IF NOT NUMVAL(PST[MKS],AB) THEN GO TO NONNUMERIC;
47450000        IF PTYPE[MKS+1] = -1
47460000           THEN AC ← PST[MKS+1]
47470000           ELSE IF NOT NUMVAL(PST[MKS+1],AC) THEN GO TO NONNUMERIC;
47480000        IF I←AA.C3 = "+" THEN I1 ← AB + AC ELSE
47490000        IF I = "-" THEN I1 ← AB - AC ELSE
47500000        IF I = "x" THEN I1 ← AB x AC ELSE
47510000        IF I = "/" THEN IF AC=0 THEN GO TO DVDZERO ELSE
47520000           CASE DIVIDEMODE OF
47530000              BEGIN
47540000           % 0: ROUND
47550000              I1 ← AB/AC;
47560000           % 1: TRUNCATION
47570000              I1 ← ENTIER(AB/AC);
47580000           % 2: INTEGER
47590000              IF (I1←AA←AB/AC) ≠ ENTIER(AA) THEN FAIL
47600000              END DIVIDE CASES ELSE
47610000        IF I = "*" THEN
47620000           IF AC = 0 THEN I1 ← 1 ELSE
47630000              BEGIN
47640000              IF AC < 0 THEN
47650000                 BEGIN AC ← -AC;
47660000                 AA ← 1/AB;
47670000                 END ELSE AA ← AB;
47680000              FOR I ← 1 STEP 1 UNTIL AC DO AA ← AA x AB;
47690000              I1 ← AA;
47700000              END ELSE
47710000           GO TO PERROR;  % INVALID CHAR AFTER "."
47720000        PST[MKS] ← I1;
47730000        PTYPE[MKS] ← -1;
47740000        END;
47750000     % 3: ".S"  CONVERT TO STRING
47760000        BEGIN
47770000        IF MKS←SP-1 < 0 OR PTYPE[MKS] ≠ -1 THEN
47780000           BEGIN INFORMO(9);
47790000           GO TO PERROR;
47800000           END;
47810000        PST[MKS] ← TEMPVAL(PST[MKS]);
47820000        PTYPE[MKS] ← 1;
```

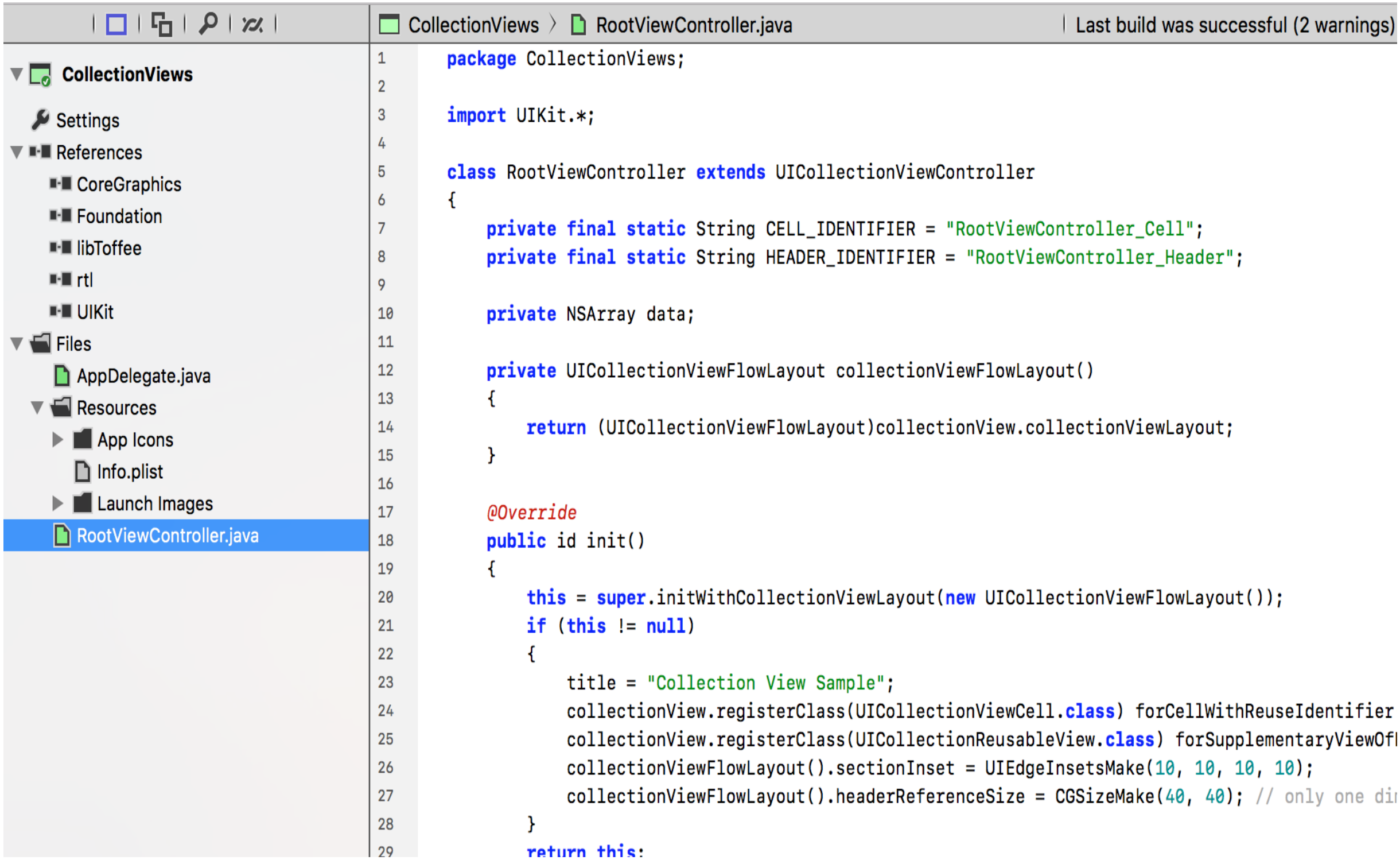
LOGO

- Developed at MIT by Seymour Papert in nearly 1960.
- Used in universities for solving complex scientific problems.
- Due to its graphics feature it can be used for educational purposes.

JAVA

- It is developed by Sun Microsystems now which is owned by Oracle corporation.
- It is the object Oriented programming language.
- This language can be run on any Java virtual machine.
- This language is suitable for running on any desktop computer, servers, Internet, microprocessor and lots more.
- Now a days all android apps are developed using JAVA.

JAVA


CollectionViews
RootViewController.java
Last build was successful (2 warnings)
CollectionViews
Settings
References
CoreGraphics
Foundation
libToffee
rtl
UIKit
Files
AppDelegate.java
Resources
App Icons
Info.plist
Launch Images
RootViewController.java
1 package CollectionViews;
2
3 import UIKit.*;
4
5 class RootViewController extends UICollectionViewController
6 {
7 private final static String CELL_IDENTIFIER = "RootViewController_Cell";
8 private final static String HEADER_IDENTIFIER = "RootViewController_Header";
9
10 private NSArray data;
11
12 private UICollectionViewFlowLayout collectionViewFlowLayout()
13 {
14 return (UICollectionViewFlowLayout)collectionView.collectionViewLayout;
15 }
16
17 @Override
18 public id init()
19 {
20 this = super.initWithCollectionViewLayout(new UICollectionViewFlowLayout());
21 if (this != null)
22 {
23 title = "Collection View Sample";
24 collectionView.registerClass(UICollectionViewCell.class) forCellWithReuseIdentifier
25 collectionView.registerClass(UICollectionReusableView.class) forSupplementaryViewOfI
26 collectionViewFlowLayout().sectionInset = UIEdgeInsetsMake(10, 10, 10, 10);
27 collectionViewFlowLayout().headerReferenceSize = CGSizeMake(40, 40); // only one di
28 }
29 return this;

SQL

- Abbreviated as 'Structured Query Language'.
- This language is developed initially at IBM.
- Used for database related application and used by database companies like ORACLE , SYBASE etc.
- This language became standard of American National Standard Institute(ANCI) for database query in 1989.

SQL

```
R version 3.2.2 (2015-08-14) -- "Fire Safety"
Copyright (C) 2015 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

  Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

Microsoft R Server version 8.0 (64-bit):
Microsoft packages Copyright (C) 2016 Microsoft Corporation

Type 'readme()' for release notes.

> lib.SQL <- "C:\\Program Files\\Microsoft SQL Server\\MSSQL13.sqlsrv16b\\R_SERVICES\\library"
> install.packages("ggplot2", lib = lib.SQL)
trying URL 'https://mran.revolutionanalytics.com/snapshot/2015-11-30/bin/windows/contrib/3.2/ggplot2_1.0.1.zip'
Content type 'application/zip' length 2675665 bytes (2.6 MB)
downloaded 2.6 MB

package 'ggplot2' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\bb2\AppData\Local\Temp\RtmpIlVfCU\downloaded_packages
>
```

Some Facts

- **First High Level Language developed and used was FORTRAN.**
- **First Computer Programmer was a women whose name is Adam Lovelace and ADA programming language is named after her.**
- **First website is made using Hyper Text Markup Language(HTML).**
- **First Version of UNIX operating system was written using C Language.**