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| **Using Arrays** | **Using ArrayList** |
| necessary instance fields | necessary instance fields |
| private Assignment[] assignments;  private String name, gender, username;  private int id, year, size; | private ArrayList<Assignmnet> assignments;  private String name, gender, username;  private int id, year; |
| public String getName(); | |
| return name; | return name; |
| public int getId(); | |
| return id; | return id; |
| public String getGender(); | |
| return gender; | return gender; |
| public int getYear(); | |
| return year; | return year; |
| public String getUsername(); | |
| return username; | return username; |
| public Assignment getGrade(String title); | |
| for (Assignment a : assignmnets)  {  if (a.getName().equals(title))  return a;  }  return null; | for (Assignment a : assignmnets)  {  if (a.getName().equals(title))  return a;  }  return null; |
| public void addGrade(Assignment grade); | |
| if (size >= assignments.length)  {  int i = 0;  Assignment[] arr = new Assignment[size \* 2];  for (Assignment a : assignments)  {  arr[i] = a;  i++;  }  assignments = arr;  }  assignments[size] = grade;  size++; | assignments.add(grade); |
| public Assignment removeGrade(int index); | |
| Assignment removed = assignments[index];  for (int i = index; i < size; i++)  {  if (i == assignments.length – 1)  assignments[i] = null;  else  assignments[i] = assignments[i+1];  }  size--;  return removed; | return assignments.remove(index); |
| public double getGradeAverage(); | |
| double total = 0;  for (Assignment a : assignments)  total += a.calcPercentage()  return total / assignments.size(); | double total = 0;  for (Assignment a : assignments)  total += a.calcPercentage()  return total / assignments.size(); |
| public double getMaxGrade(); | |
| double max = 0;  for (Assignment a : assignments)  {  if (a.calcPercentage() > max)  max = a.calcPercentage();  }  return max; | double max = 0;  for (Assignment a : assignments)  {  if (a.calcPercentage() > max)  max = a.calcPercentage();  }  return max; |
| public double getMinGrade(); | |
| double min = 1;  for (Assignment a : assignments)  {  if (a.calcPercentage() < min)  min = a.calcPercentage();  }  return min; | double min = 1;  for (Assignment a : assignments)  {  if (a.calcPercentage() < min)  min = a.calcPercentage();  }  return min; |
| public void printAllGrades(); | |
| for (Assignment a : assignments)  System.out.println(a.calcPercentage()); | for (Assignment a : assignments)  System.out.println(a.calcPercentage()); |