DATA STRUCTURES FINAL PROJECT

BALANCE THAT CHECKING

By Jasmin Gomez Heredia

THE PURPOSE

- Personal finance is a topic that is rarely spoken in causal interactions but still has a huge impact on all of our daily lives. This program aims to display the users cash flow within a given month, meaning it will break down the amount of debut, total cash and disposable income. This program uses simple algebra to make such calculations and is intended to be a clear breakdown of the user’s money.

METRICS OF EVALUATION FOR FINANCIAL HEALTH

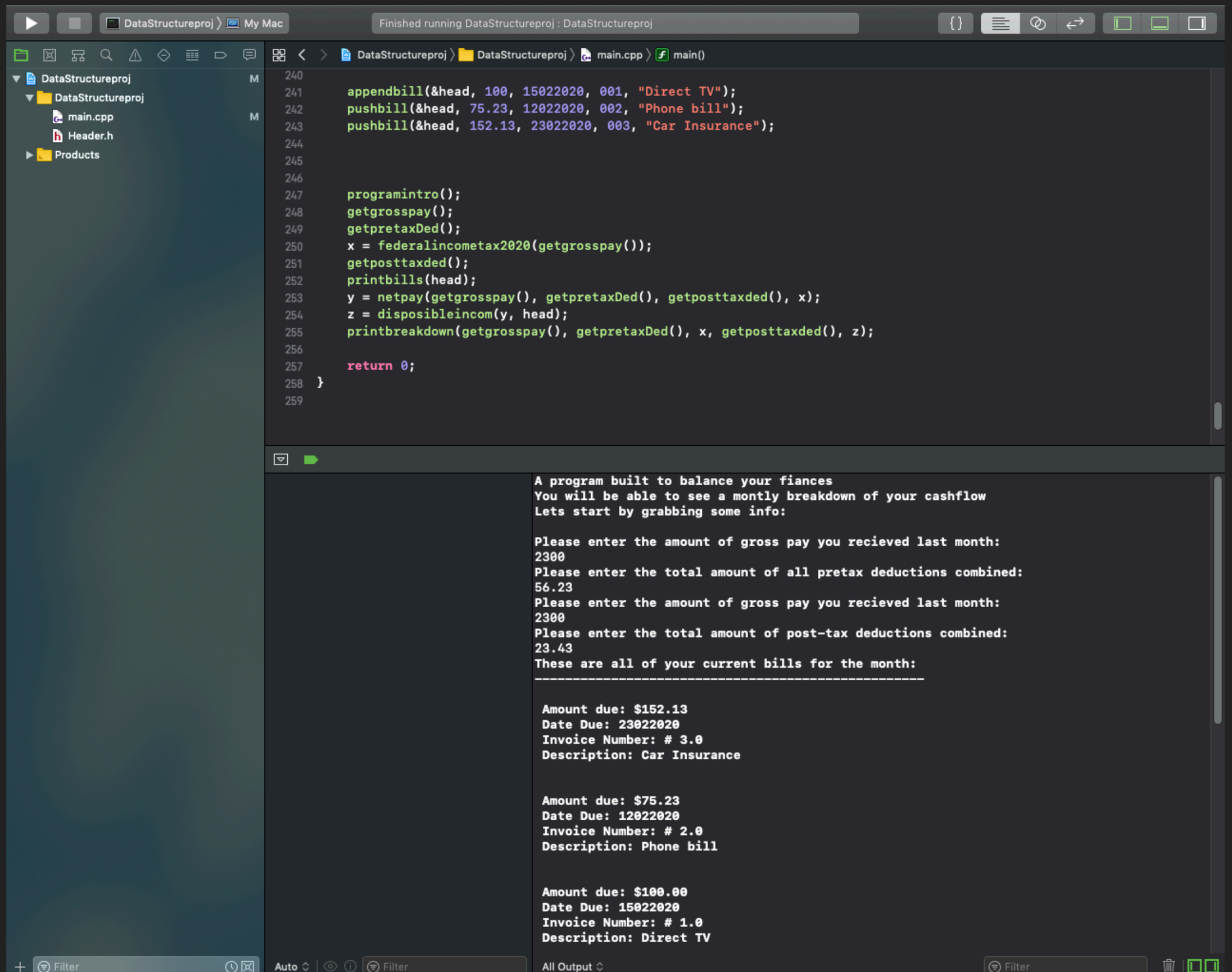
- Gross Pay - The total amount of money one earns
- Pre-Tax deductions - An example of this would be a 401K
- Tax - A percentage that is taken to pay for civic expenses
- Post-tax deductions - The purchase of stocks through employer
- Net Pay - The money that one actually receives after all deductions are made
- Savings - Savings quota if that is instilled by the user
- Bills - Phone bills, utilities , credit card payments, etc

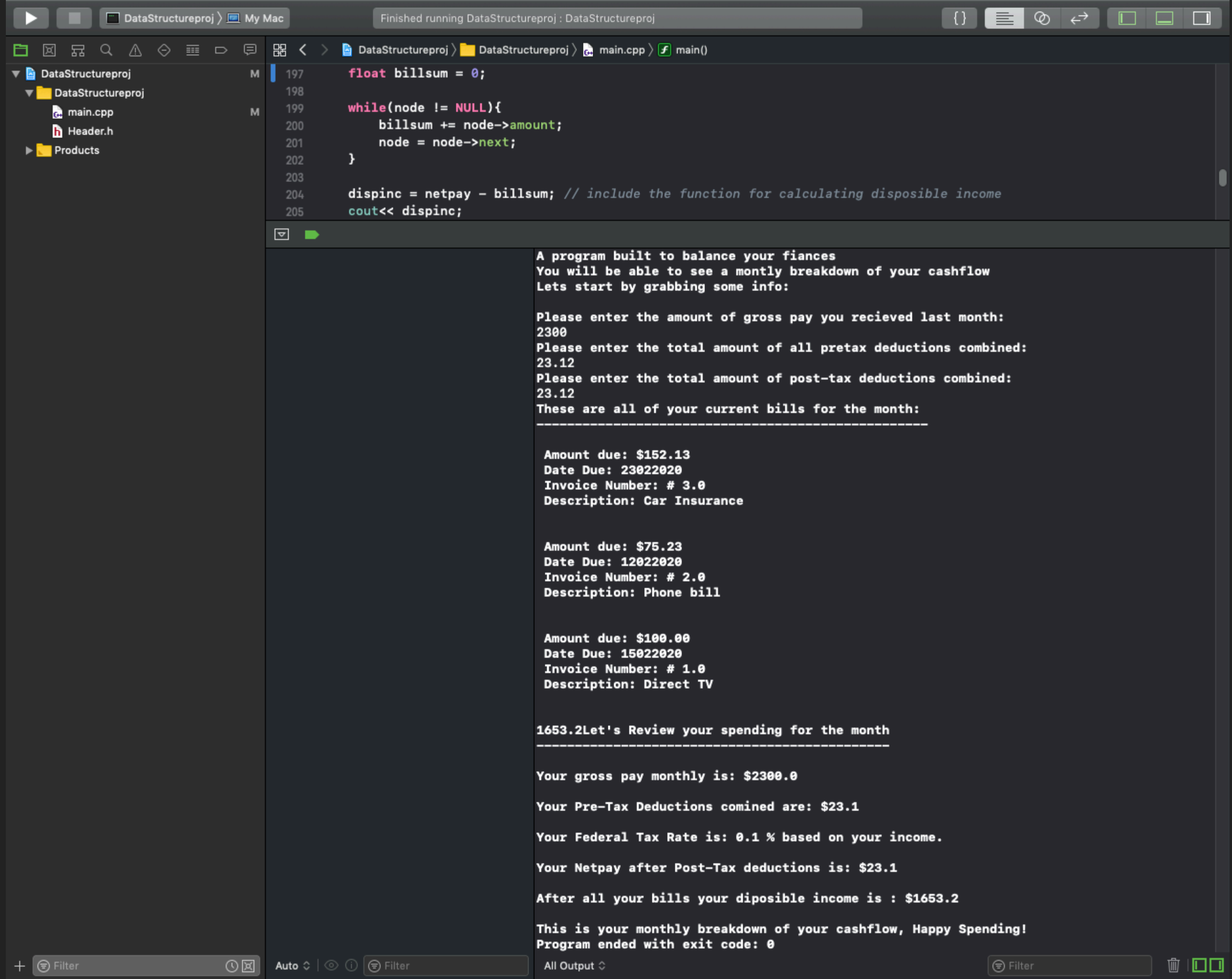
Formula for Calculating Monthly Expenses

Gross Pay

- PreTax Deductions
- Federal Income Tax (Percentage %)
- Post Tax Deductions
- Bills
- _____
- Disposable Income

OVERVIEW (THE PROOF THAT IT RUNS) SCREENSHOTS 5




DataStructureproj
My Mac
Finished running DataStructureproj : DataStructureproj
DataStructureproj
DataStructureproj
main.cpp
Header.h
Products
DataStructureproj
DataStructureproj
main.cpp
main()
197 float billsum = 0;
198
199 while(node != NULL){
200 billsum += node->amount;
201 node = node->next;
202 }
203
204 dispinc = netpay - billsum; // include the function for calculating disposible income
205 cout<< dispinc;
A program built to balance your fiances
You will be able to see a montly breakdown of your cashflow
Lets start by grabbing some info:
Please enter the amount of gross pay you recieved last month:
2300
Please enter the total amount of all pretax deductions combined:
23.12
Please enter the total amount of post-tax deductions combined:
23.12
These are all of your current bills for the month:
Amount due: $152.13
Date Due: 23022020
Invoice Number: # 3.0
Description: Car Insurance
Amount due: $75.23
Date Due: 12022020
Invoice Number: # 2.0
Description: Phone bill
Amount due: $100.00
Date Due: 15022020
Invoice Number: # 1.0
Description: Direct TV
1653.2Let's Review your spending for the month
Your gross pay monthly is: $2300.0
Your Pre-Tax Deductions comined are: $23.1
Your Federal Tax Rate is: 0.1 % based on your income.
Your Netpay after Post-Tax deductions is: $23.1
After all your bills your diposible income is : $1653.2
This is your monthly breakdown of your cashflow, Happy Spending!
Program ended with exit code: 0
Filter
Auto
Filter
All Output
Filter

```
240
241     appendbill(&head, 100, 15022020, 001, "Direct TV");
242     pushbill(&head, 75.23, 12022020, 002, "Phone bill");
243     pushbill(&head, 152.13, 23022020, 003, "Car Insurance");
244
245
246
247     programintro();
248     getgrosspay();
249     getpretaxDed();
250     x = federalincometax2020(getgrosspay());
251     getposttaxded();
252     printbills(head);
253     y = netpay(getgrosspay(), getpretaxDed(), getposttaxded(), x);
254     z = disposibleincom(y, head);
255     printbreakdown(getgrosspay(), getpretaxDed(), x, getposttaxded(), z);
256
257     return 0;
258 }
259
```

```
Date Due: 15022020
Invoice Number: # 1.0
 Description: Direct TV


Please enter the amount of gross pay you recieved last month:
2300
Please enter the total amount of all pretax deductions combined:
56.23
Please enter the total amount of post-tax deductions combined:
23.34
1623.8Please enter the amount of gross pay you recieved last month:
2300
Please enter the total amount of all pretax deductions combined:
43.23
Please enter the total amount of post-tax deductions combined:
23.43
Let's Review your spending for the month
----------------------------------------

Your gross pay monthly is: $2300.0

Your Pre-Tax Deductions comined are: $43.2

Your Federal Tax Rate is: 0.1 % based on your income.

Your Netpay after Post-Tax deductions is: $23.4

After all your bills your diposible income is : $1623.8

This is your monthly breakdown of your cashflow, Happy Spending!
Program ended with exit code: 0
```

```
164
165 void printbills(bill *node){
166     // need to find a way to organize displaying data
167     cout<<"These are all of your current bills for the month: \n";
168     cout<<"------------------------------------------------- \n";
169     cout<<"                                                  \n";
170
171     while (node != NULL){
172         // find fix the precison for the appropriate data type
173         cout <<right<<" "<<setprecision(2)<<fixed<<"Amount due: $"<<node->amount<<" \n";
174         //need to format date to display nicer
175         cout <<right<<" "<<setprecision(0)<<"Date Due: "<<node->date<<" \n";
176         cout <<right<<" "<<setprecision(1)<<fixed<<"Invoice Number: # "<<node->invoice<<" \n";
177         cout <<right<<" "<<"Description: "<<node->name<<" \n";
178         cout <<"                                         \n";
179         node = node->next;
180         cout<<"                                            \n";
181     }
182 }
183
184 //calculates netpay
185 float netpay(float totalfunds, float pretaxD, float postaxD, float taxrate){
186     float netpay, afterpret;
187
188     afterpret = (totalfunds - pretaxD);
189     netpay = afterpret - (afterpret * taxrate)- postaxD;
190
191     return netpay;
192 }
193
```

```
23.43
These are all of your current bills for the month:
-------------------------------------------------

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 Description: Car Insurance


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 Date Due: 12022020
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Please enter the amount of gross pay you recieved last month:
```

DataStructureproj 〉 My Mac | Finished running DataStructureproj : DataStructureproj

DataStructureproj 〉 DataStructureproj 〉 main.cpp 〉 main()

- DataStructureproj M
  - DataStructureproj
    - main.cpp M
    - Header.h
  - Products

```
233     cout<<right<<"This is your monthly breakdown of your cashflow, Happy Spending! \n";
234
235 }
236
237 int main() {
238     float a, b, c, x, y, z;
239     bill* head = nullptr;
240
```

```
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1653.2Let's Review your spending for the month
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```

Filter | Auto | Filter | All Output | Filter

CHALLENGES

Programming Challenges

- Implementing the data members for the Bill class correctly through out the program to assure the functions where computing correct answers
- The C++ linker is a real thing and one should keep that in mind
- Ordering the nodes in the linked list so that the logic would integrate well with rest of the program
- Formatting data from the linked list things like dollar amount and invoice number
- Effective modularization of the functions

CHALLENGES

Interpersonal Challenges

- Brainstorming the functionality of the program and the design of all the features
- Optimization of the features meaning finding more effective ways of performing the same function
- Stepping back long enough to evaluate the integrity of the program’s design
- persistence - revisiting buggy code and creating a better outcome

ROOM FOR IMPROVEMENT

- Finding more effective ways of collecting input from the customer -like uploading a pdf of a paystub
- Optimization of the features meaning finding more effective ways of performing the same function
- Creating User Interface (UI) so that users are able to visualize the amount of money that is being allocated to each category
- Creating a way to format output so that users can export the data calculated into a file that will be useful

Questions?

THANK YOU