HW4

Hyunki Lee

1)loanCalc.c

Source Code

hlee152@gsuad.gsu.edu@snowball:~

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>

int main(){
double loan,rate;
int num,i;
double A,r,B;
double interestPay,principalPay;

printf("Enter amount of loan: $ ");
scanf("%lf",&loan);
printf("Enter Interest rate per year : %% ");
scanf("%lf",&rate);
printf("Enter number of payments : ");
scanf("%d",&num);
r = rate/(12*100);
A = loan*(r/(1 - pow((1 + r),-num)));
printf("\nMontly payment should be $%.2lf\n",A);
printf("============================AMORTIZATION SCHEDULE==============\n");
printf("#\tPayment\t\tPrincipal\tInterest\tBalance\n");

for(i = 1; i <= num;i++)
{
printf("%d\t$%.2lf\t\t",i,A);
interestPay = loan * r;
principalPay = A - interestPay;
B = loan - principalPay;
printf("$%.2lf\t\t$%.2lf\t\t$%.2lf\n",principalPay,interestPay,B);
loan = B;
}

return 0;
}
~
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~
~
~
~
~
~
~
"loanCalc.c" 34L, 794C                                32,0-1        All
```

Output

```
[hlee152@gsuad.gsu.edu@snowball ~]$ ./loanCalc
Enter amount of loan: $ 2000
Enter Interest rate per year : % 7.5
Enter number of payments : 6

Montly payment should be $340.66
==========================AMORTIZATION SCHEDULE==============
#       Payment         Principal       Interest        Balance
1       $340.66         $328.16         $12.50          $1671.84
2       $340.66         $330.21         $10.45          $1341.62
3       $340.66         $332.28         $8.39           $1009.35
4       $340.66         $334.35         $6.31           $674.99
5       $340.66         $336.44         $4.22           $338.55
6       $340.66         $338.55         $2.12           $0.00
[hlee152@gsuad.gsu.edu@snowball ~]$
```

2) loanCalcArr.c

Source Code

hlee152@gsuad.gsu.edu@snowball:~

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>

int main(){

double loan,rate;
int num,i;
double A,r,b;
double INT[1000],B[1000],P[1000];
printf("Enter amount of loan : $ ");
scanf("%lf",&loan);
printf("Enter interest rate per year: %% ");
scanf("%lf",&rate);
printf("Enter number of payments : ");
scanf("%d",&num);

r = rate/1200;
A = loan*((r*pow(1+r,num))/(pow(1+r,num)-1));
B[0] = loan;

printf("\nMontly payment should be %.2lf\n",A);
printf("==============================AMORTIZATION SCHEDULE==================\n'
);
printf("# \t Payment \t Principal \t Interest \t Balance\n");

for( i=1; i<=num; i++){
INT[i] = B[i-1]*r;
P[i] = A-INT[i];
B[i] = B[i-1]-P[i];

printf("%d \t $%.2lf \t $%.2lf \t $%.2lf ",i,A,P[i],INT[i]);

if(INT[i]/10.0<1.0)
printf("\t\t $%.2lf",B[i]);
else
printf("\t $%.2lf",B[i]);
printf("\n");
}

return 0;

}
~
~
~
~
~
~
"loanCalcArr.c" 42L, 846C                                    31,1          All
```

Output

```
[hlee152@gsuad.gsu.edu@snowball ~]$ ./loanCalcArr
Enter amount of loan : $ 2000
Enter interest rate per year: % 7.5
Enter number of payments : 6

Montly payment should be 340.66
============================AMORTIZATION SCHEDULE==================
#        Payment         Principal       Interest        Balance
1        $340.66         $328.16         $12.50          $1671.84
2        $340.66         $330.21         $10.45          $1341.62
3        $340.66         $332.28         $8.39           $1009.35
4        $340.66         $334.35         $6.31           $674.99
5        $340.66         $336.44         $4.22           $338.55
6        $340.66         $338.55         $2.12           $0.00
[hlee152@gsuad.gsu.edu@snowball ~]$
```

3)loanCalcPtr.c

Source Code

hlee152@gsuad.gsu.edu@snowball:~

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>

int main(){

double loan,rate;
int num,i;
double A,r,b;
double INT[1000],B[1000],P[1000];

printf("Enter amount of loan : $ ");
scanf("%lf",&loan);
printf("Enter interest rate per year: %% ");
scanf("%lf",&rate);
printf("Enter number of payments : ");
scanf("%d",&num);

r = rate/1200;
A = loan*((r*pow(1+r,num))/(pow(1+r,num)-1));
*(B) = loan;

printf("\nMontly payment should be %.2lf\n",A);
printf("============================AMORTIZATION SCHEDULE==================\n"
);
printf("# \t Payment \t Principal \t Interest \t Balance\n");

for( i=1; i<=num; i++){
*(INT+i) = *(B+i-1)*r;
*(P+i) = A-*(INT+i);
*(B+i) = *(B+i-1)-*(P+i);

printf("%d \t $%.2lf \t $%.2lf \t $%.2lf ",i,A,P[i],INT[i]);

if(INT[i]/10.0<1.0)
printf("\t\t $%.2lf",B[i]);
else
printf("\t $%.2lf",B[i]);
printf("\n");
}

return 0;

}
~
~
~
~
~
"loanCalcPtr.c" 43L, 861C                                41,1          All
```

Output

```
[hlee152@gsuad.gsu.edu@snowball ~]$ ./loanCalcPtr
Enter amount of loan : $ 2000
Enter interest rate per year: % 7.5
Enter number of payments : 6

Montly payment should be 340.66
============================AMORTIZATION SCHEDULE==================
#        Payment         Principal       Interest        Balance
1        $340.66         $328.16         $12.50          $1671.84
2        $340.66         $330.21         $10.45          $1341.62
3        $340.66         $332.28         $8.39           $1009.35
4        $340.66         $334.35         $6.31           $674.99
5        $340.66         $336.44         $4.22           $338.55
6        $340.66         $338.55         $2.12           $0.00
[hlee152@gsuad.gsu.edu@snowball ~]$
```

4)loanCalcStruct.c

Source Code

hlee152@gsuad.gsu.edu@snowball:~

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>

struct s
{
double INT,B,P;
}cost[100];

int main(){

double loan,rate;
int num,i;
double A,r,b;

printf("Enter amount of loan : $ ");
scanf("%lf",&loan);
printf("Enter interest rate per year: %% ");
scanf("%lf",&rate);
printf("Enter number of payments : ");
scanf("%d",&num);

r = rate/1200;
A = loan*((r*pow(1+r,num))/(pow(1+r,num)-1));
cost[0].B = loan;

printf("\nMontly payment should be %.2lf\n",A);
printf("============================AMORTIZATION SCHEDULE==================\n'
);
printf("# \t Payment \t Principal \t Interest \t Balance\n");

for( i=1; i<=num; i++){
cost[i].INT =cost[i-1].B*r;
cost[i].P = A-cost[i].INT;
cost[i].B = cost[i-1].B - cost[i].P;

printf("%d \t $%.2lf \t $%.2lf \t $%.2lf ",i,A,cost[i].P,cost[i].INT);

if(cost[i].INT/10.0<1.0)
printf("\t\t $%.2lf",cost[i].B);
else
printf("\t $%.2lf",cost[i].B);
printf("\n");
}

return 0;

}
~
"loanCalcStruct.c" 47L, 919C                                  34,1          All
```

Output

```
[hlee152@gsuad.gsu.edu@snowball ~]$ ./loanCalcStruct
Enter amount of loan : $ 2000
Enter interest rate per year: % 7.5
Enter number of payments : 6

Montly payment should be 340.66
============================AMORTIZATION SCHEDULE==================
#        Payment         Principal       Interest        Balance
1        $340.66         $328.16         $12.50          $1671.84
2        $340.66         $330.21         $10.45          $1341.62
3        $340.66         $332.28         $8.39           $1009.35
4        $340.66         $334.35         $6.31           $674.99
5        $340.66         $336.44         $4.22           $338.55
6        $340.66         $338.55         $2.12           $0.00
[hlee152@gsuad.gsu.edu@snowball ~]$
```