

Question 1

Refer to the website for the eligibility conditions for HDB Housing loans:
<https://www.hdb.gov.sg/cs/infoweb/residential/financing-a-flat-purchase/housing-loan-from-hdb/eligibility-conditions>

The relevant conditions, sometimes simplified, expanded or rephrased from the website, are shown in:

- Table Q1.1 as conditions on the buyer:
 - The buyer refers to the buyer of the HDB flat. There can be one buyer or at most two buyers if the HDB flat is to be purchased by two joint buyers.
 - An applicant of HDB loans is a buyer or one of the two joint buyers.
 - An application must fulfil several conditions pertaining to the citizenship, the household status, the income ceiling, and the ownership/interest in property.
- Table Q1.2 as condition on extended family's income ceiling if the loan application is made for a HDB flat purchased under extended family scheme.
- Table Q1.3 as condition on HDB flat in terms of remaining lease left. The loan tenure is dependent on the buyers' average age and the remaining lease.

Citizenship	<ul style="list-style-type: none">• At least 1 buyer is a Singapore citizen. <i>Note: There can be at most two joint buyers of a HDB unit for which loan is being applied.</i>
Household Status	Buyers <ul style="list-style-type: none">• Have not taken any housing loan from HDB or• Have taken 1 housing loan from HDB and the last owned property is not a private residential property (local or overseas) such as:<ul style="list-style-type: none">○ HUDC flat.○ Property acquired by gift.○ Property inherited as a beneficiary under a will or as a result of the Intestate Succession Act.○ Property owned/ acquired/ disposed of through nominees.• Must not have previously taken 2 or more housing loans from HDB.
Income Ceiling	Average gross monthly household income does not exceed: <ul style="list-style-type: none">• \$12,000 for families• \$18,000 for extended families• \$6,000 for singles <p>Loan may be taken under family, extended family or single schemes with the respective income ceilings of \$12,000,</p>

	<p>\$18,000 and \$6,000.</p> <p>Refer to Table Q1.2 for the categories of extended families, and examples for computing gross monthly household income for extended families</p>
Ownership/ Interest in Property	<p>Buyers</p> <ul style="list-style-type: none"> Must not own or have disposed of any private residential property in the 30 months before the date of application for an HDB Loan Eligibility (HLE) letter. A private residential property (local or overseas) will include: <ul style="list-style-type: none"> Property acquired by gift Property inherited as a beneficiary under a will or as a result of the Intestate Succession Act Property owned/ acquired/ disposed of through nominees Also, must not own more than 1 market/ hawker stall or commercial/ industrial property. If only 1 market/ hawker stall or commercial/ industrial property is owned, <ul style="list-style-type: none"> you must be operating the business there, and you have no other sources of income.

Table Q1.1: Conditions on Buyer

If a HDB flat is applied under the extended family scheme, then the monthly income of both the parents and children staying in the HDB unit will be used to determine the buyers' eligibility for HDB loan.

The parents and children are placed into groups A and B, depending on whether there are only single children staying in the flat, or whether there is at least one married child or a child who has applied for another flat under the fiancé/fiancée scheme.

Category	Group A's Income (Income cannot exceed \$12,000 per month)	Group B's Income (Income cannot exceed \$12,000 per month)	Extended Family Income Ceiling
Parents with only single children in HDB unit	Parents with 1 single working child.	All other single children	Total income of Group A and Group B must not exceed \$18,000
Parents with married child or child under fiancé/fiancée scheme staying in HDB unit	Parents with any ONE single working children	Married child's family or child and fiancé/fiancée	

Table Q1.2: Income Ceiling of Buyer under extended family scheme

Example 1:

A married couple with 4 single working children wishes to get an HDB housing loan to buy an HDB flat. Their average gross monthly income is as follows:

Husband = \$5,000

Wife = \$4,000

Child 1 = \$6,000

Child 2 = \$2,000

Child 3 = \$0

Child 4 = \$0

Their average gross monthly income as an extended family works out to:

Income of Group A <ul style="list-style-type: none"> Parents and 1 of the children Cannot exceed \$12,000 	Income of Group B <ul style="list-style-type: none"> Remaining children Cannot exceed \$12,000 	Extended Family Income Ceiling <ul style="list-style-type: none"> Total income of Group A and Group B must not exceed \$18,000
Husband + Wife + Child 2 = \$11,000	Child 1 + Child 3 + Child 4 = \$6,000	\$17,000 The family is able to meet the income ceiling for the extended family.

Example 2:

A married couple with 2 single children and another child who has applied for a HDB flat under the fiancé/fiancée scheme wishes to get an HDB housing loan to buy an HDB flat. Their average gross monthly income is as follows:

Husband = \$5,000

Wife = \$4,000

Child 1 = \$6,000 (has applied for HDB flat under fiancé/fiancée scheme)

Child 1's fiancée = \$4,000

Child 2 = \$2,000

Child 3 = \$0

Their average gross monthly income as an extended family works out to:

Income of Group A <ul style="list-style-type: none"> Parents and 1 of the children Cannot exceed \$12,000 	Income of Group B <ul style="list-style-type: none"> Married child's family or child and fiancé/fiancée Cannot exceed \$12,000 	Extended Family Income Ceiling <ul style="list-style-type: none"> Total income of Group A and Group B must not exceed \$18,000
Husband + Wife +	Child 1 + Child 1 fiancée	\$19,000

Income of Group A	Income of Group B	Extended Family Income Ceiling
<ul style="list-style-type: none"> Parents and 1 of the children Cannot exceed \$12,000 	<ul style="list-style-type: none"> Married child's family or child and fiancé/fiancée Cannot exceed \$12,000 	<ul style="list-style-type: none"> Total income of Group A and Group B must not exceed \$18,000
Child 3 = \$9,000	= \$10,000	The family does not meet the income ceiling for the extended family.

The remaining lease of the HDB flat and the average age of the buyers determine the loan tenure, that is, the repayment period.

Remaining Lease of HDB Flat	HDB Housing Loan
60 years or more	Allowed. Maximum loan tenure is 25 years.
20 to 59 years	Allowed if remaining lease covers the buyer* up to the age of at least 80. The maximum loan tenure will be the shortest of: <ul style="list-style-type: none"> 25 years; 65 years minus the average age of the buyers; or Balance lease at the point of purchase, minus 20 years.
Less than 20 years	<ul style="list-style-type: none"> Not allowed
<p>* Based on the average age if there is more than one buyer. Round up to the nearest whole number. For example, 23.1 should be rounded up to 24.</p>	

Table Q1.3 Remaining Lease of HDB flat

Example 1:

A husband aged 44 and wife, aged 41 are joint buyers, and the remaining lease of the HDB flat is 30 years.

Average age is 42.

Allow if the remaining lease covers the buyer, up to the age of at least 80. However, 42 + 30 is less than 80. Therefore, loan is not allowed.

Example 2:

A husband aged 44 and wife, aged 41 are joint buyers, and the remaining lease of the HDB flat is 40 years.

Average age is 42.

Allow if the remaining lease covers the buyer, up to the age of at least 80.

$42 + 40$ is at least 80. Therefore, loan is allowed if all other conditions are also met.

The maximum loan is the shortest of

- 25,
- $65 - \text{average age}$, that is, $65 - 42 = 23$
- $\text{remaining lease} - 20$, that is, $40 - 20 = 20$

Loan is allowed with a maximum of 20 years.

- (a) Employ structured programming principles and express a sequence of statements based on computational logic to write a program that prompts the user to enter the relevant input (i) – (xi) in this order. Note that you should not use global variables. Perform the following steps for each input (i) – (xi):

- Prompt until user supplies a valid value.
- Use the valid input value to determine whether it satisfies the loan condition.
 - If the current input meets the condition, but more input is needed to determine whether a loan can be allowed, prompt the user for the next input.
 - If the current input satisfies the condition, and no more input is needed to determine whether a loan can be allowed, determine the maximum allowable loan tenure, and end the program.

Display the output message in the format of the following message, where xx is the maximum allowed loan tenure:

- Maximum years of loan tenure is xx.
- If the loan cannot be allowed based on the current input, display an error message for the failed condition, and end the program. Use the following error messages:
 - At least one buyer must be a Singapore citizen
 - Household status does not qualify for loan
 - Average gross monthly household income exceeded
 - Must not own or have disposed of any private residential property in the 30 months and if own one business market/ hawker stall or commercial/ industrial property, must be operating there
 - Remaining Lease of HDB Flat is insufficient

The required input (i) to (xi) in order of how the user is prompted, are as follows:

- (i) The number of buyers or applicants applying for the loan.
The valid input is either 1 or 2.
(1 mark)
- (ii) Whether at least one buyer has Singapore citizenship.
The valid input is either Y or N, either in uppercase or lowercase.
(1 mark)
- (iii) The number of HDB loans taken previously.
The valid input is a whole number from 0 upwards.
(2 marks)
- (iv) Whether last owned property is a private residential property.
The valid input is either Y or N, either in uppercase or lowercase.
(3 marks)
- (v) The scheme under which the loan is made – either family, extended family or single.
The valid input is either F, E or S for family, extended family and single respectively, either in uppercase or lowercase.
(1 mark)
- (vi) The monthly income of the family (that is, both applicants), the monthly incomes of the extended family or the income of the single buyer.
The valid input is a decimal number from 0.0 upwards.
- The number of input prompts for monthly income depends on the scheme that the HDB flat will be bought under.
- 1 for single scheme,
 - 2 family scheme, and
 - 2 (for husband and wife) + N single children **or**
2 (for husband and wife) + 1 (any) single child + 1 married/betrothed child + 1 (for married/betrothed child's fiancé/fiancée) for extended scheme.
- (6 marks)
- (vii) Whether the applicants owned or have disposed of any private residential property in the 30 months before the date of application for an HDB Loan.
The valid input is either Y or N, either in uppercase or lowercase.
(1 mark)
- (viii) The number of market/hawker stall or commercial/industrial property currently owned.
The valid input is a whole number from 0 upwards.
(1 mark)
- (ix) If the number of market/hawker stall or commercial/industrial property currently owned is 1, whether the applicant is operating the business at the property, and has no other sources of income.
The valid input is either Y or N, either in uppercase or lowercase.

(1 mark)

- (x) The age of applicants.
The valid input is a decimal number from 21 upwards.
The number of input prompts for age depends on whether there is only one buyer or there are two joint buyers.

(2 marks)

- (xi) The number of years of remaining lease.
The valid input is a whole number from 1 to 99.

(3 marks)

Three sample runs are shown here (user input in green):

Run 1:

```
Enter number of applicants, valid values from 1 to 2: 2
Enter whether one least one buyer is Singapore citizenship
Enter either Y for Yes or N for No: y
Enter number of HDB loans taken previously, valid values from 0: 1
Enter whether last owned property is a private residential property (local or
overseas) such as:
- HUDC flat
- Property acquired by gift
- Property inherited as a beneficiary under a will or as a result of the
Intestate Succession Act
- Property owned/ acquired/ disposed of through nominees
Enter either Y for Yes or N for No: n
Enter which scheme loan is made under
Enter either F for Family or E for Extended family or S for Single: e
Enter monthly income of first applicant, valid values from 0.0: 4000
Enter monthly income of second applicant, valid values from 0.0: 3000
Enter number of children, valid values from 1: 3
Enter whether any child in household is married or applied HDB Fiance/Fiancee
Scheme
Enter either Y for Yes or N for No: y
Enter monthly income of child married or has applied HDB Fiance/Fiancee Scheme,
valid values from 0.0: 4000
Enter monthly income of fiance/fiancee/spouse of child, valid values from 0.0:
4000
Enter monthly income of any single child, valid values from 0.0: 0
Enter whether you have owned or have disposed of any private residential property
in the 30 months before the date of application for an HDB Loan Eligibility (HLE)
letter.
A private residential property (local or overseas) will include:
- Property acquired by gift
- Property inherited as a beneficiary under a will or as a result of the
Intestate Succession Act
- Property owned/ acquired/ disposed of through nominees
Enter either Y for Yes or N for No: n
Enter number of market/ hawker stall or commercial/ industrial property you
currently owned, valid values from 0: 1
Enter whether operating the business there, and have no other sources of income
Enter either Y for Yes or N for No: y
Enter age of first applicant, valid values from 21.0: 55
Enter age of second applicant, valid values from 21.0: 50
Enter number of years of remaining lease, valid values from 1 to 99: 30
Maximum years of loan tenure is 10
```

Run 2:

```
Enter number of applicants, valid values from 1 to 2: 1
Enter whether buyer is Singapore citizenship
Enter either Y for Yes or N for No: y
```

Enter number of HDB loans taken previously, valid values from 0: 0
 Enter which scheme loan is made under
 Enter either F for Family or E for Extended family or S for Single: e
 Enter monthly income of first applicant, valid values from 0.0: 5000
 Enter monthly income of second applicant, valid values from 0.0: 2000
 Enter number of children, valid values from 1: 4
 Enter whether any child in household is married or applied HDB Fiance/Fiancee Scheme
 Enter either Y for Yes or N for No: n
 Enter monthly income of child 1, valid values from 0.0: 3500
 Enter monthly income of child 2, valid values from 0.0: 4000
 Enter monthly income of child 3, valid values from 0.0: 1000
 Enter monthly income of child 4, valid values from 0.0: 0
 Enter whether you have owned or have disposed of any private residential property in the 30 months before the date of application for an HDB Loan Eligibility (HLE) letter.
 A private residential property (local or overseas) will include:
 - Property acquired by gift
 - Property inherited as a beneficiary under a will or as a result of the Intestate Succession Act
 - Property owned/ acquired/ disposed of through nominees
 Enter either Y for Yes or N for No: n
 Enter number of market/ hawker stall or commercial/ industrial property you currently owned, valid values from 0: 0
 Enter age of applicant, valid values from 21.0: 54
 Enter number of years of remaining lease, valid values from 1 to 99: 50
 Maximum years of loan tenure is 11

Run 3:

Enter number of applicants, valid values from 1 to 2: 1
 Enter whether buyer is Singapore citizenship
 Enter either Y for Yes or N for No: y
 Enter number of HDB loans taken previously, valid values from 0: 3
 Not eligible. Household status does not qualify for loan